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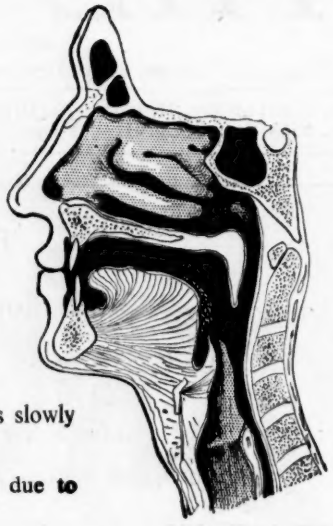

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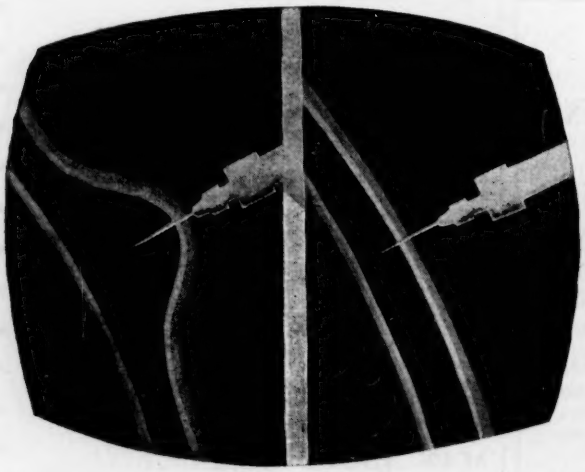

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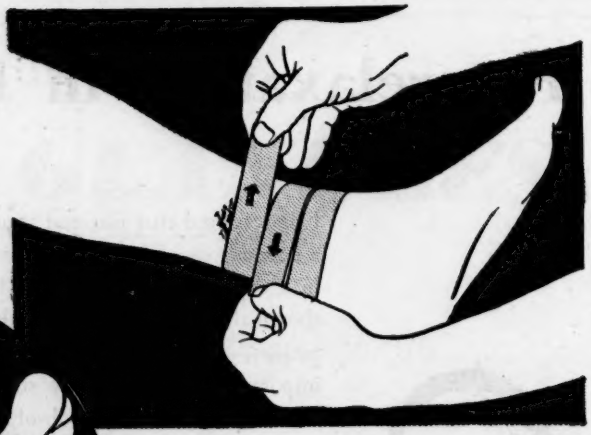

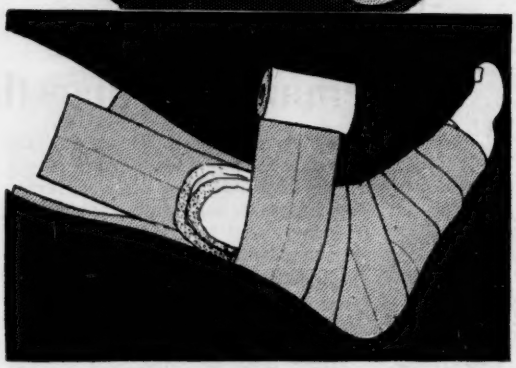

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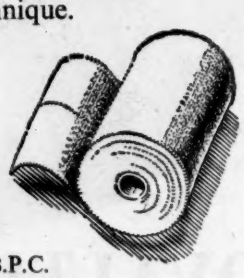

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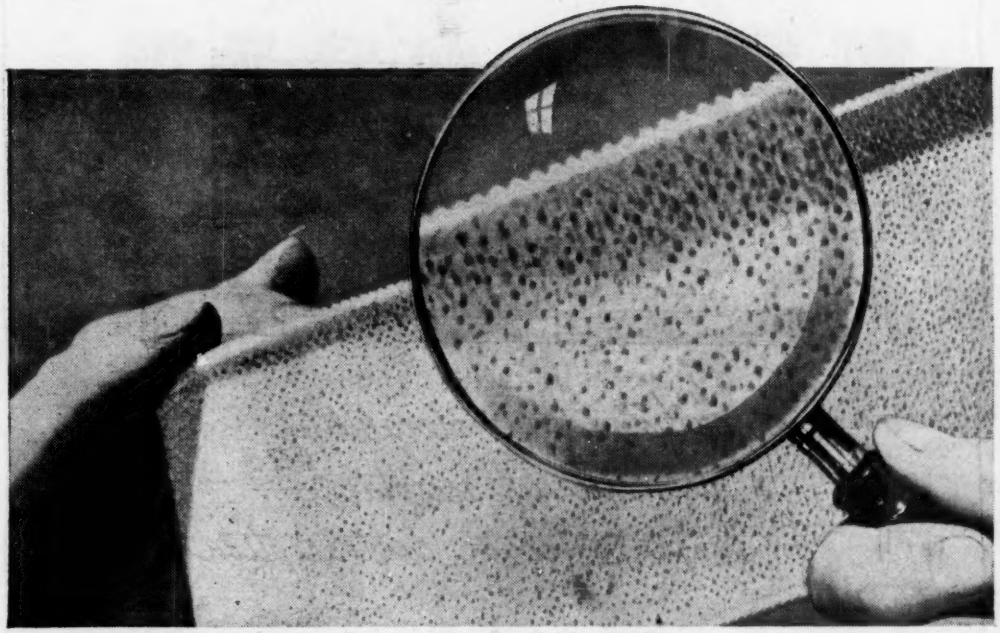

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PERMISSIBLE ON THE N.H.S.

PROFESSIONAL SAMPLE AND LITERATURE ON REQUEST

HOMMEL'S HÆMATOGEN & DRUG CO., 121 Norwood Road, London S.E.24

Save time on urine tests with . . .

CLINITEST and ACETEST

TRADE MARK TRADE MARK

Reagent Tablets for the detection of Glycosuria

Reagent Tablets for the detection of Ketonuria

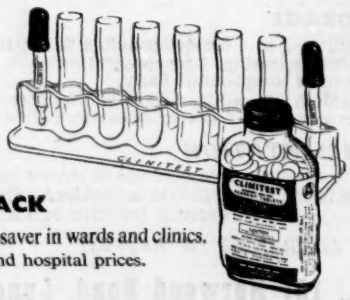
Both tests performed simultaneously in one minute!

Specialists, General Practitioners, Clinics and Hospitals in all parts of the country have used and prescribed 'Clinitest' Reagent Tablets since 1947. Many valuable hours have been saved. Now after intensive research work and clinical trials the makers of 'Clinitest' Reagent Tablets have produced 'Acetest' Reagent Tablets for the detection of Ketonuria. With 'Clinitest' and 'Acetest' Reagent Tablets, reliable routine sugar and acetone tests can be carried out *simultaneously* in one minute!

CLINITEST

No external heating · No measuring of reagents

Approved by the Medical Advisory Committee of the Diabetic Association. The 'Clinitest' set, refills and accessories are all available under the N.H.S. on Form E.C.10. (*Basic Drug Tariff Prices: Set* 6/8 *complete. Refill bottles of* 36 *tablets* 2/4.)



CLINITEST
HOSPITAL PACK

An invaluable time-saver in wards and clinics. Write for details and hospital prices.

The advantages of ACETEST Reagent Tablets

Quick and reliable, a single tablet provides all the reagents to perform a test. Low cost permits this tablet test to be used as a screening procedure or as a routine for diabetic patients. No danger of false positives with normal urine. No caustic reagents.

TO PERFORM A TEST:

1 **Put 1 drop of urine on tablet.**

2 **Take reading at 30 seconds. Compare tablet to colour chart provided.**

3 **Record results as negative, trace, moderate or strongly positive.**

Supplied in bottles of 100 *tablets with colour scale.*

'Acetest' Reagent Tablets (*diagnostic nitroprusside tabs.*) are also available under the N.H.S. on Form E.C.10. Basic Drug Tariff price 3/10 per bottle of 100 tablets (with colour scale).

REFERENCES

(1954) 'Clinical Tests for Ketonuria', *'Lancet', April 17th, pp. 801/804*

(1954) *'Medicine Illustrated', May, p. 289*

(1954) *'Practical Clinical Biochemistry', Heinemann, p. 74*

(1954) 'Clinical Tests for Ketonuria', *'Lancet', July 10th, p. 95*

AMES COMPANY (LONDON) LTD.

Sole Distributors for the United Kingdom and Eire:

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34

A physiological treatment of constipation

SENOKOT RESTORES NATURAL RHYTHM

Senna is a neuro-muscular stimulant of peristalsis and produces a good imitation of normal defaecation. Such a physiological effect is of great value in restoring natural rhythm.

Through the production of Senokot,* the first stable, standardised preparation of senna, the full therapeutic activity of the drug has been made available and its re-educative effect demonstrated.

Senokot
REGD.

STANDARDISED SENNA GRANULES

Lancet, 1952, 1, 655.
ibid 1953, 1, 497 and 602.
Practitioner, 1953, 170, 266.
Medical Press, 1954, 231, 521.

Dose: children ½—1, adults 1—2 teaspoonfuls.
Sizes: 2 oz., 6 oz., dispensing pack of 2 lb.
Category 3: Joint Committee on Prescribing.
Senokot is not advertised to the public.

WESTMINSTER LABORATORIES LTD., CHALCOT ROAD, LONDON, N.W.1

HYDROCORTISONE

MADE IN ENGLAND

SKIN OINTMENT

CORTISONE

EYE DROPS & EYE OINTMENT

ROUSSEL

UNITED KINGDOM

Orders can now be accepted from Hospitals only, for
HYDROCORTISONE SKIN OINTMENT
CORTISONE EYE DROPS
AND EYE OINTMENT,
but not for other presentations, which are still distributed exclusively by the Ministry of Health.

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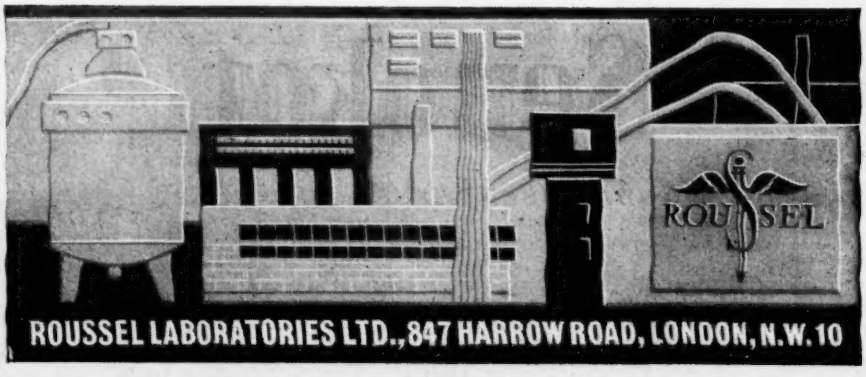
All forms of Hydrocortisone and Cortisone are freely available.



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Two outstanding preparations

Parentrovite

A new injectable preparation of B-vitamins and vitamin C in high concentration designed especially for treatment of the patient who is toxic, possibly with coma or delirium, from

overdosage with narcotics or barbiturates, excessive consumption of alcohol, viral or bacterial infections.

In all these circumstances there is derangement of intracellular metabolism, involving inactivation of the B vitamin enzyme systems and severe depletion of body stores.

Recovery may be speeded by, and may even depend upon, the restoration of normal intracellular metabolism by means of high blood *concentrations of the vitamins concerned.*

To achieve this aim, ampoules are available in pairs of 5 c.c. for intravenous injection in acute conditions, and in smaller volumes for intramuscular injection in less urgent cases or for maintenance therapy.

Omnivite forte

A preparation in tablet form for the continuation treatment of the *alcohol addict.*

All the vitamins known to be concerned in intracellular metabolism are present in amounts found by clinical trial to be effective.

Further details of both these preparations may be obtained on request.

See 1953 *Lancet* ii, 474.
1954 *Proc. Roy. Soc. Med.*, 47, 215.
1954 *J. Amer. med. Ass.*, 155, 114.
1954 *J. Addiction*, 51, 29, 39.

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Transvasin

brings the esters of NICOTINIC ACID SALICYLIC ACID p-AMINOBENZOIC ACID to the focal point of soft-tissue rheumatism

The esters in Transvasin, a new preparation developed by Hamol S.A., our Swiss associates, readily pass the skin barrier in therapeutic quantities and enable an effective concentration of the drugs to be built up where they are needed. Transvasin not only induces vasodilation of the skin with a superficial erythema, but also brings about a deep hyperaemia of the underlying tissues. It is non-irritant, and can be safely used on delicate skins.

It is now being widely prescribed, with successful clinical results. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low.

Salicylic acid tetrahydrofurfuryl-ester	14%
Nicotinic acid ethyl-ester	2%
Nicotinic acid n-hexyl-ester	2%
p-Aminobenzoic acid ethyl-ester	2%
Water-miscible cream base ad	100%

Transvasin is available in 1 oz. tubes, basic price 2/6 plus 7½d P.T., and is not advertised to the public. Samples and literature will be gladly sent on application.

LLOYD-HAMOL LTD., 11 Waterloo Place, London, S.W.1 WHItehall 8654/5/6

Transvasin is the registered trade mark of Lloyd-Hamol Ltd.

Congested ?

Decongested !

We have no panacea to offer those wrestling with the traffic congestion of our cities but Karvol Inhalant Capsules will clear the respiratory thoroughfare. In the common cold, in bronchitis and bronchial catarrh and in more serious conditions too, of the pharynx, bronchi and bronchioles the town dweller, particularly, living in a fog and soot-laden atmosphere may turn to Karvol with safety and confidence.

Crookes KARVOL INHALANT CAPSULES

Bottles of 20 capsules. *May we send you samples?*

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Tyrosolven is a lozenge containing tyrothricin, an antibiotic, and benzocaine, a local anaesthetic. It is of particular value during influenza epidemics, since it is effective against most of the potentially noxious creatures which proliferate in the mouth and pharynx under such conditions, e.g. haemolytic, streptococci, enterococci, vibrioform and fusiform bacilli and spirochaetes.

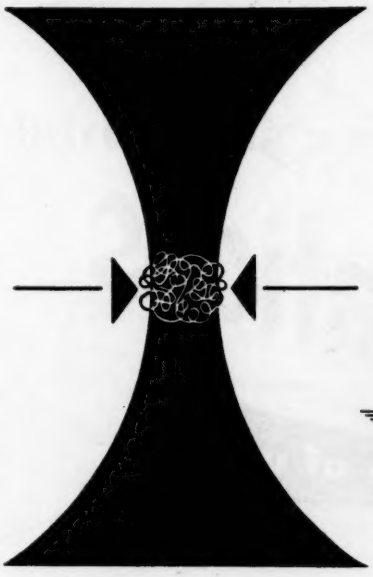
Dosage: Place 1 lozenge under the tongue hourly. Allow to dissolve. Do NOT chew. Repeat until condition improves, then continue dosage 3-hourly.

Formula:
Tyrothricin 1 mg., benzocaine 5 mg.
Packing:
Packs of 20 Lozenges; dispensing packs of 250 supplied at 16/8d.
Tyrosolven is not subject to Purchase Tax.

Tyrosolven

No Warner preparation has ever been advertised to the public.

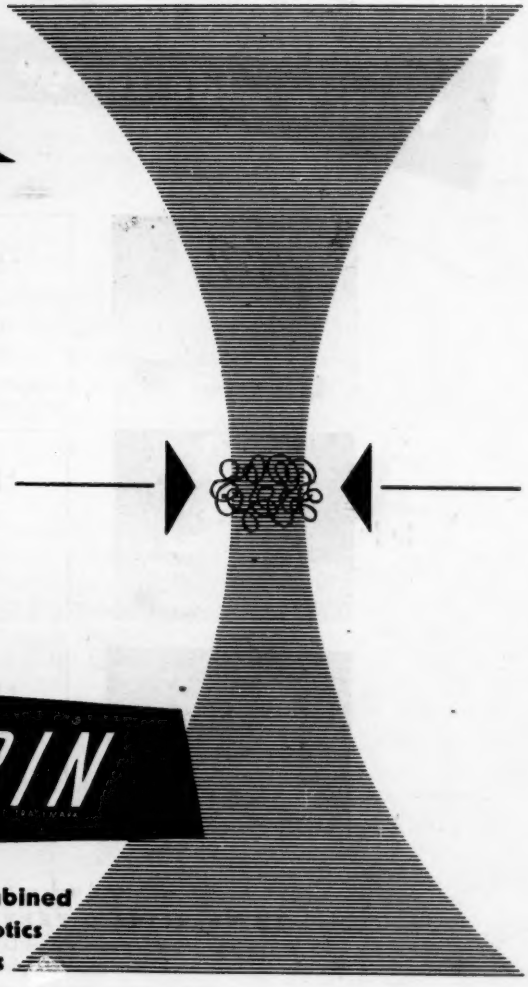
WILLIAM R. WARNER & Co. Ltd.,
Power Road, London, W.4.



ASTHMA

Bronchospasm in bronchitis, emphysema, silicosis

postoperative pulmonary atelectasis



Supplied:

Aleudrin solution 1% for use with a Lewlab Inhaler; for aerosol use dilute 3 to 5 times

Aleudrin tablets of 0.02 g for sublingual administration

ALEUDRIN

Paves the way for combined aerosol treatment with antibiotics and sulphonamides

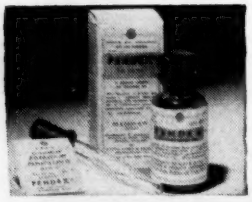
LEWIS LABORATORIES LTD., LEEDS 9

Nasal Preparations

With a wide range of uses

'SULFEX'

sulphathiazole with the exceptionally effective vasoconstrictor 'Paredrinex' is of great value in acute infections.



'PENDEX'

penicillin with 'Paredrinex'. A powerful weapon against many established infections, particularly those involving the sinuses.

'BENZEDRINE' INHALER

A reliable and convenient presentation of a highly efficient vasoconstrictor for the relief of congestion on all occasions.

For cost to N.H.S., please see M. & J. list of costs dated April, 1954

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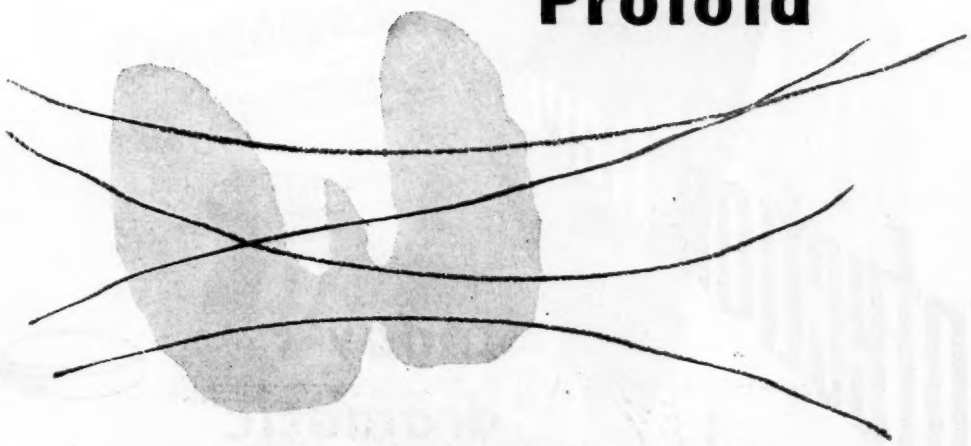
Tel: BRIxton 7851

'Sulfex', 'Pendex', 'Paredrinex', and 'Benzedrine' are registered trade marks

N/3P114

Introducing a new Thyroid extract

Proloid



Proloid is the purified essential metabolic stimulant of the thyroid gland, doubly assayed—biologically and chemically—to ensure uniform strength. Proloid is the preparation of preference in any condition where chemically standardized thyroid extracts are now employed. *Proloid has the following advantages:—*

1. Uniform strength—no danger of fluctuating metabolic potency.
2. Less cardiac stimulation than with other thyroid extracts.
3. Standardized to meet B.P. requirements—prescribed in the same dosage.

Proloid

Further literature and samples available on request

No Warner preparation has ever been advertised to the public

WILLIAM R. WARNER & CO. LTD · Power Road, London, W.4.

today's dramatic answer . . .

CETYL PYRIDINIUM CHLORIDE

NOW INCORPORATED INTO **PROCIDETS**

Cetyl pyridinium chloride (C.P.C.) is one of the most outstanding bactericidal compounds introduced into medicine. It kills oral pathogenic streptococci at a dilution of 1 in 200,000. Procidets* make a perfect vehicle for this powerful bactericide. Its addition to the sodium propionate in Procidets Lozenges arms the practitioner with a double-barrelled weapon against many bacterial and fungal infections of the throat, mouth and gums. By reducing surface tension, C.P.C. carries the germicidal action of Procidets deeply into the folds and crevices of the mouth, tonsils and pharynx. The germicidal value of Procidets is such that ¼ of a Lozenge rapidly kills *Streptococcus Pyogenes* in a 20 cc. saliva solution. Procidets are non-toxic, non-irritating and, containing benzocaine, give immediate relief from soreness in the throat and mouth. Indicated for preventing and treating numerous infections such as tonsillitis, pharyngitis, laryngitis, etc., and other inflammatory conditions of the mouth and throat.

Issued in cartons of 18 *Lozenges metal-foil sealed. Clinical samples and technical literature available on request.*

Each Procidets Lozenge contains :—

Cetyl Pyridinium Chloride	0.2 *mg.*
Sodium Propionate	200 *mg.*
Benzocaine	5 *mg.*

In a mint-flavoured base

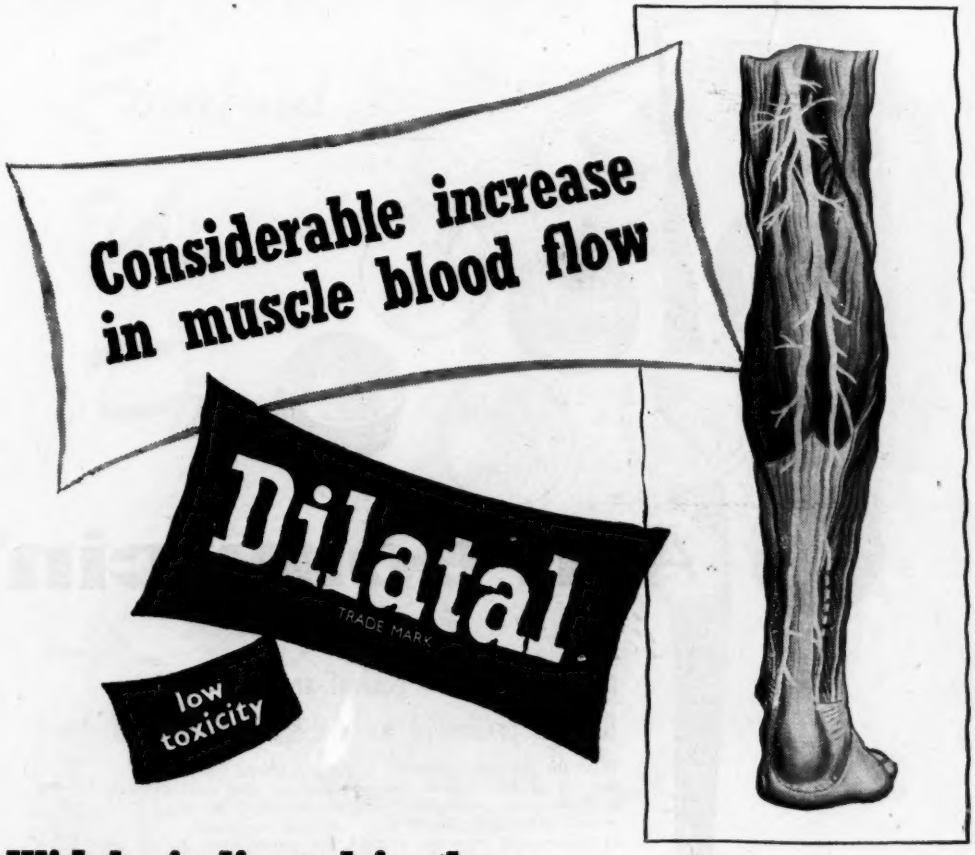
* Regd. Trade Mark

PROCIDETS

THROAT LOZENGES

Now contain Cetyl Pyridinium Chloride 1 *in* 5,000

HARKER STAGG LTD. EMMOTT STREET, LONDON, E.1. STEPNEY GREEN 2022.



Widely indicated in the treatment of circulatory disorders

- INCREASED CARDIAC OUTPUT MAINTAINS MEAN ARTERIAL PRESSURE.
- DIRECT ACTION ON THE MUSCULATURE OF THE BLOOD VESSELS.

DILATAL* is safe and rapidly effective by oral and parenteral administration. Available in tablets (2.5 mg. in containers of 100 and 500) and ampoules (5 mg. in 1 ml.—in boxes of 12).

*1-(p-hydroxyphenyl)-2-(1'-methyl-3'-phenyl-propylamino)-propanol-(1) hydrochloride

SMITH & NEPHEW LTD.,
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the marketing organisation of Herts Pharmaceuticals Ltd., the manufacturers and owners of the trade mark DILATAL.

G.1160

Aureomycin*

Chlortetracycline *Lederle*

now available for general practice

Can be prescribed on N.H.S. Form E.C. 10.

With the complete removal of the restrictions on the use of Aureomycin Chlortetracycline, this most versatile broad-spectrum antibiotic can be prescribed by the general practitioner for a wide range of infections of known and unknown origin. No matter what the age or condition of the patient, there is a form of Aureomycin presentation for every purpose :—

Capsules
Dental Cones
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Nasal
Ointment
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Ophthalmic Ointment
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Soluble Tablets
Syrup
Spersoids*
Dispersible Powder
Troches
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Literature on request.

* *Trade mark*
‡ *At present available to hospitals only.*

Aureomycin means . . . greater action . . . smaller dosage . . . lower cost

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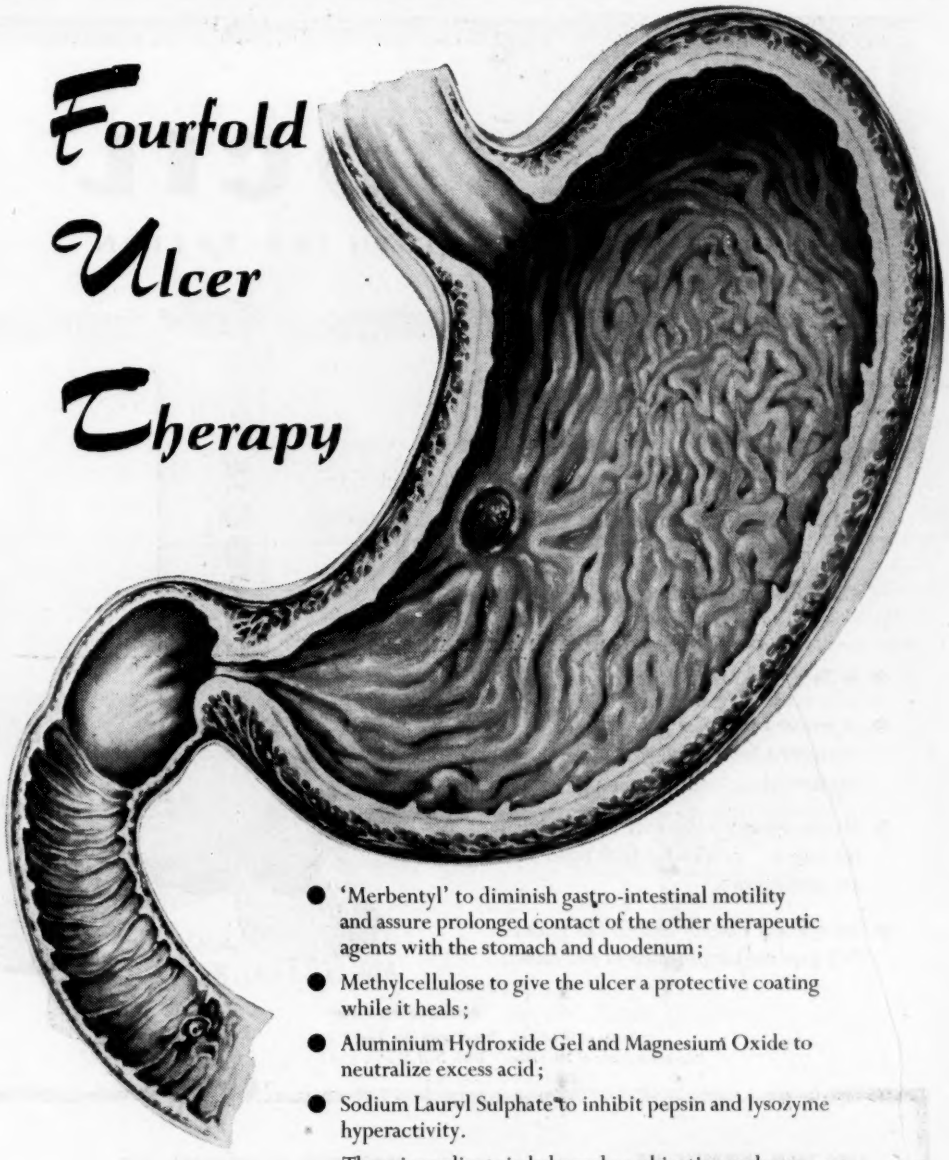
LEDERLE LABORATORIES DIVISION

Cyanamid Products Ltd.

BUSH HOUSE, ALDWYCH, LONDON, W.C.2 TEMPLE BAR 5411

Fourfold Ulcer Therapy



- 'Merbentyl' to diminish gastro-intestinal motility and assure prolonged contact of the other therapeutic agents with the stomach and duodenum;
- Methylcellulose to give the ulcer a protective coating while it heals;
- Aluminium Hydroxide Gel and Magnesium Oxide to neutralize excess acid;
- Sodium Lauryl Sulphate to inhibit pepsin and lysozyme hyperactivity.

These ingredients in balanced combination make up the new and highly effective peptic ulcer medicament.

Each tablet contains:—

'Merbentyl' (diethylaminocarbethoxybicyclohexyl hydrochloride)	5 mg.
Aluminium Hydroxide Gel	400 mg.
Magnesium Oxide	200 mg.
Sodium Lauryl Sulphate	25 mg.
Methylcellulose	100 mg.

Bottles of 50 and 250 tablets.

KOLANTYL

REGD

distributed in the United Kingdom & Eire by
RIKER LABORATORIES LIMITED, LOUGHBOROUGH, LEICS.
for the Wm. S. Merrell Company, London.

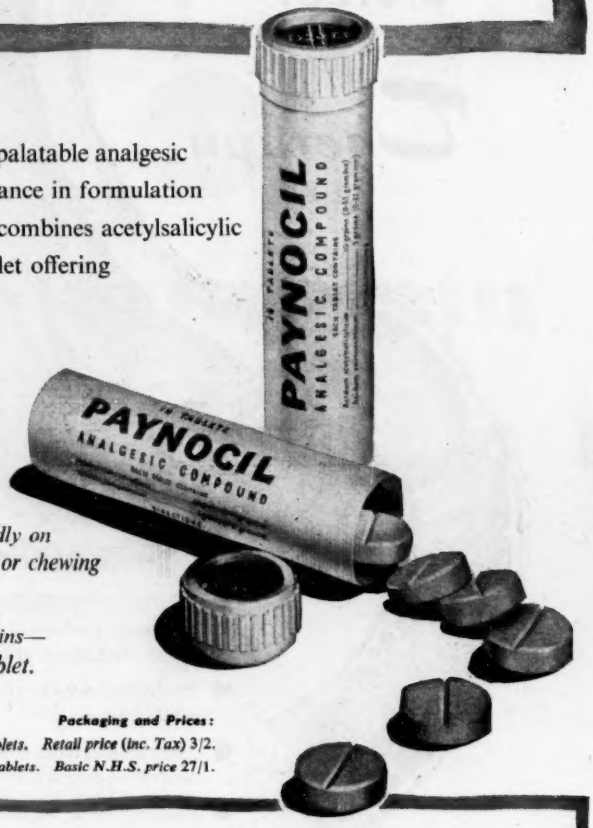
Merrell

PAYNOCIL

OVERCOMES ASPIRIN IRRITATION

Paynocil is a new, non-irritant, palatable analgesic representing a considerable advance in formulation among products of its kind. It combines acetylsalicylic and amino-acetic acids in a tablet offering the following advantages:

- *It does not cause gastric irritation.*
- *It provides the most palatable and convenient form of analgesic medication.*
- *It disintegrates pleasantly and rapidly on the tongue; swallowing with water or chewing are unnecessary.*
- *An effective dose of aspirin (10 grains—0·65 gramme) is provided in one tablet.*



Packaging and Prices:
Tubes of 18 tablets. Retail price (inc. Tax) 3/2.
Dispensing packs of 240 tablets. Basic N.H.S. price 27/1.

LONG TERM, INTENSIVE USE

Because of its non-irritant properties Paynocil is ideal in the prolonged aspirin therapy necessary in rheumatoid arthritis.

SHORT TERM OR OCCASIONAL USE

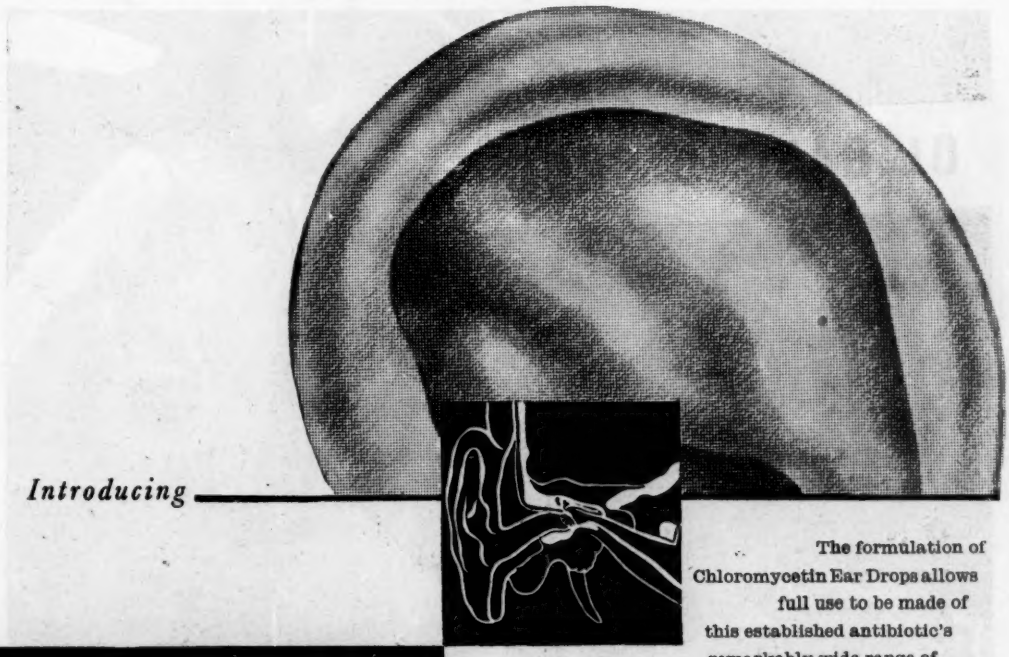
It is equally suitable for the occasional analgesia required for headaches or neuralgia owing to its convenience and acceptability to all patients.

Formula: *each tablet contains:*
Acetylsalicylic acid . . . . . 10 grains (0·65 gramme)
Amino-acetic acid . . . . . 5 grains (0·32 gramme)

C. L. BENCARD LTD
Telephone: ELGar 6681

BENCARD

PARK ROYAL, LONDON, N.W.10
Telegrams: Bencarlond, Harles, London



Introducing

CHLOROMYCETIN
ear drops

in the treatment of

EAR INFECTIONS

The formulation of Chloromycetin Ear Drops allows full use to be made of this established antibiotic's remarkably wide range of bactericidal activity. Chloromycetin Ear Drops are advocated in the treatment of chronic otorrhœa, suppurative otitis media and infections of fenestration and mastoid operation cavities.

REFERENCES:

"Treatment of Chronic Otorrhœa and Chloromycetin" *Brit. Med. J.*, 2:939, 1951

"Local Application of Chloramphenicol" *Lancet*, 2:268, 1951

CHLOROMYCETIN EAR DROPS (Chloromycetin Topical, 10%)
(chloramphenicol B.P. 10 per cent in propylene glycol)
supplied in 5 c.c. vials, and bottles of 100 c.c.
with dropper

Parke, Davis
& COMPANY, LIMITED *Inc. U.S.A.*
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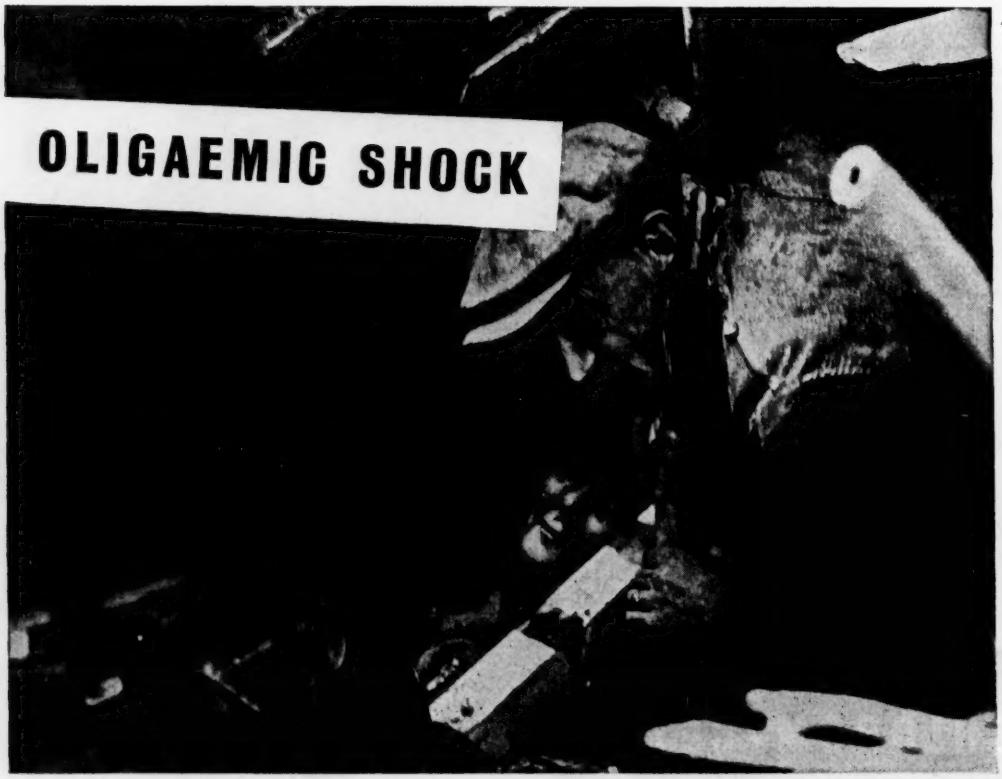

THIS WOMAN is in shock. Her blood pressure must be raised swiftly and maintained, now, during any operation which may follow, and in the post-operative period.

A CLEAR CASE FOR DEXTRAVEN, the *optimal* fraction dextran.

DEXTRAVEN raises the blood pressure swiftly and surely, and because there is minimum wastage stays in the circulation in significant concentration during the critical 24 hours.

DEXTRAVEN can be given immediately by intravenous infusion. It is stable indefinitely under all climatic conditions—no special storage precautions are necessary. DEXTRAVEN is approved by the Ministry of Health. Fully descriptive literature is available and a Technical Information Service is always at your disposal.

A clear case for DEXTRAVEN TRADE MARK

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE

A BENGER PRODUCT

D. 2

Time off for allergy?

Many thousands of working hours are lost throughout the year because of allergic disorders. Much of this loss in efficiency and production is preventable. Allergy rarely causes complete prostration but even so, the discomfort caused to patients is usually enough to reduce their efficiency whether they are housewife, office worker, or the man who works in a factory. When symptoms of allergic or sensitization reactions limit the patient's activities, treatment with one of the **M&B** brand antihistaminics is indicated. In most cases these drugs provide rapid and effective control of the distressing symptoms and enable the patient to resume a normal life.

Supplies: **'Anthisan'—50 and 100 mgm. tablets; elixir containing 25 mgm. per 3·6 c.c. (approx. 1 teaspoonful); solution for injection; and cream. 'Phenergan'—10 and 25 mgm. tablets; elixir containing 5 mgm. per 3·6 c.c. (approx. 1 teaspoonful); solution for injection; and cream incorporating dibromopropamidine isethionate.**

*** Please note that these products are available in *two* strengths of tablets.**

'Anthisan'
trade mark *brand*
MEPYRAMINE MALEATE
THE GENERAL-PURPOSE ANTIHISTAMINIC

'Phenergan'
trade mark *brand*
PROMETHAZINE HYDROCHLORIDE
THE ANTIHISTAMINIC WITH A PROLONGED ACTION

MANUFACTURED BY **MAY & BAKER LTD**

***M&B** brand Medical Products* MA.2240

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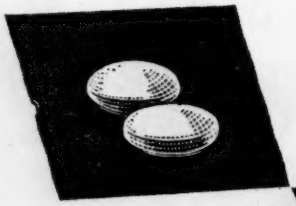
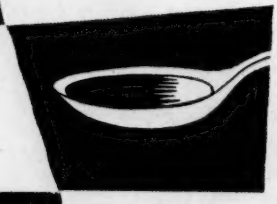
50% Reduced dosage
50% Higher utilisation

30% REDUCTION IN PRICE





FERROMYN

(Ferrous Succinate)

the new organic iron– a complete range at *reduced* prices

Leadership in oral iron therapy

This new iron preparation presents Ferrous Succinate, the bivalent iron salt of succinic acid. Succinic acid, together with glycine is essential for the synthesis in the red bone marrow of a porphyrin (hæm) containing iron.

Our controlled clinical trials with FERROMYN show a mean utilisation factor of 42% as compared with the mean utilisation factor of 28% with Ferrous Gluconate and 14% with Ferrous Sulphate.

A notable feature of this preparation is that the very favourable response is obtained with the minimum overall dosage of ferrous salt thus ensuring minimum risk of toxic reaction.

The range of FERROMYN preparations has been extended to include ELIXIR FERROMYN and ELIXIR FERROMYN 'B'.

TABLETS

EACH TABLET CONTAINS:—
Ferrous Succinate 150 mgm.

Bottles of 100 3/- + P.T.
Bottles of 1000 26/- + P.T.

ELIXIR 'B'

EACH TEASPOONFUL CONTAINS:—
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Aneurine Hydrochloride 1 mgm.
Riboflavin 1 mgm.
Nicotinamide 10 mgm.

4 fl. ozs. 4/6
20 fl. ozs. 21/6
40 fl. ozs. 42/-
80 fl. ozs. 80/-
all exempt P.T.

ELIXIR

EACH TEASPOONFUL CONTAINS:—
Ferrous Succinate 150 mgm.

4 fl. ozs. 4/3 + P.T.
20 fl. ozs. 20/6 + P.T.
40 fl. ozs. 40/- + P.T.
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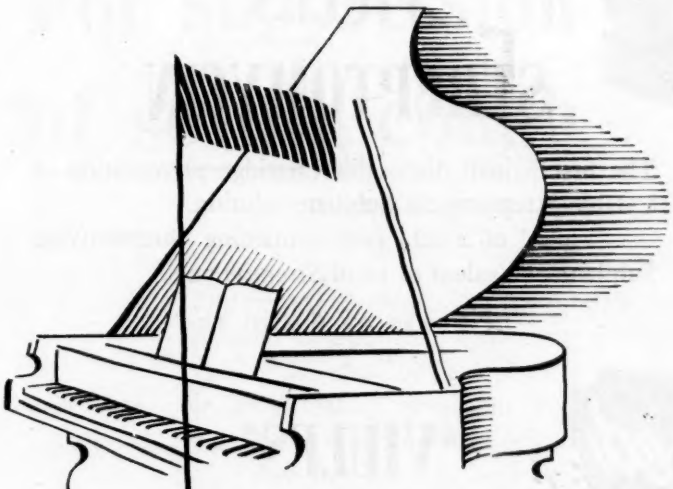

cinnamate

Striking a new note

in ORAL CHLORAMPHENICOL *therapy*

A new tasteless derivative of chloramphenicol, which leaves no residual bitterness on the tongue after oral administration, has been combined with atropine to form a palatable suspension which has a wide range of therapeutic activity when given by mouth.

with ***atropine***

Chloramphenicol cinnamate, this new derivative, is hydrolysed in the alimentary tract releasing the parent substance, chloramphenicol. The small dose of atropine reduces the possibility of gastric intolerance and aids the retention of the antibiotic.

Alficetyn Suspension is pleasant to take, easily administered, well tolerated and rapidly effective.

another new A&H product

ALFICETYN SUSPENSION

CHLORAMPHENICOL CINNAMATE *with* ATROPINE

In bottles of 60 c.c.

ALLEN & HANBURYS LTD · LONDON · E·2

TELEPHONE: BISHOPSGATE 3201 (20 LINES). TELEGRAMS: "GREENBURYS, BETH, LONDON"

'VIULES' STREPTOMYCIN

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THE CLINICAL EVALUATION OF REMEDIES *

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THOUGH I abandoned practical medicine for administrative work a quarter of a century ago, I have chosen an essentially clinical subject for this lecture, since it has been one of my major interests during my service with the Medical Research Council. The arrangement of clinical trials of methods of treatment for which there is a good prima-facie case based on laboratory or other evidence has always been one of the Council's functions; but their work in this field has achieved special importance with the astonishingly rapid development of therapeutics in the last ten years. Post-war economic difficulties and the coming of the National Health Service have greatly increased their responsibilities in this respect, and it is now the practice of the Ministry of Health to seek advice from the Council about the merits of any new remedy costing dollars or other foreign currency which may be needed in large quantity for use in hospitals or by doctors in practice. Sometimes this advice can be given on the basis of the evidence already available from the country of origin; often confirmatory tests are necessary, and it is in devising and carrying out these in a manner calculated to produce decisive answers that the many clinicians, pathologists, and statisticians serving voluntarily upon the Council's clinical trials committees have done such valuable work, to which I am happy to pay tribute here.

If, as seems probable, James Lind's account of his test of oranges and lemons against scurvy in 1747 is the earliest published description of a clinical trial with carefully matched controls, it can fairly be claimed that the modern type of controlled clinical trial was a British "invention"; it can be claimed with no less justice that this kind of trial in the form in which it has been developed since the end of the second world war is a very characteristic and respectable British institution, attributable in part, perhaps, to our native scepticism and our reluctance to take at their face value the over-enthusiastic press reports that are too often published about new remedies when they are first announced. Its high prestige, both at home and abroad (Gaddum 1954, Mainland 1954), is due very largely to Professor Bradford Hill and his colleagues, who have laid down the requirements for such trials and discussed the ethical considerations that must govern them, in a series of papers (Hill 1951, 1952, Reid 1950) upon which I have drawn freely in preparing this lecture, though I shall not, myself, presume to deal in any detail with statistical techniques.

Before considering the evolution, advantages, and limitations of some of the types of therapeutic trial that are in vogue today, it may be helpful to review briefly the different criteria that have been used throughout the ages to evaluate methods of treatment.

Historical Survey

The repute of a treatment may depend upon observation and experience of the phenomena following its use; it may depend upon "Authority," tradition, or theoretical considerations that may be sound or unsound; or upon the results of experiment, controlled or uncontrolled, made with the deliberate aim of advancing knowledge. It is a convenient simplification but an oversimplification to talk about Observation, Authority, and Experiment in medicine as though they were distinct disciplines, for in therapeutics the methods of observation and experiment have much in common, and even Authority—the unscientific member of the triad, and the one which did so much to hinder the progress of knowledge from the time of Galen to the middle of the 19th century—may originally have been founded upon either or both of the others. Lauder Brunton (1887) and, in our own time, Pickering (1949) and Gaddum (1954) have pointed out that the treatment of every patient is virtually an experiment, and Hill, in one of the witty lectures with which he enlivens the subject of medical statistics, has suggested that even the primitive witch-doctor, trying for the first time a new and nauseating compound, must surely, like Alice nibbling at the mushroom, have murmured to himself "Which way?"

OBSERVATION AND EMPIRICISM

Apart from the experimental factor inherent in all therapy, there is abundant evidence from the history of medicine and pharmacy that the experiential or empirical method is the oldest way of assessing remedies; it has given us many active drugs that have been used for centuries and are used even today, and it can still make significant contributions to medical progress. As means of assessing the clinical value of a remedy, the chief limitation of empirical observations is that they commonly fail to take adequate account of other factors that may have influenced the outcome—a limitation which applies also to the uncontrolled clinical trial. In consequence, many hundreds of galenical remedies and formulæ which enjoyed a high reputation for centuries have fallen by the wayside, and only a small minority—consisting mainly of those whose active principles have been examined by accurate pharmacological methods and careful clinical trials—survives; and the casualty list extends into our own time, in the cases of remedies evaluated only on the basis of unsupported clinical impressions. It is to prevent the misinterpretation of coincidence and to restrict the number of variables which may complicate the assessment of the findings that the fully controlled clinical trial as we know it today has been introduced.

As an example of a medicament whose actions, presumably, were discovered empirically, let us consider first that ancient and unpleasant symptomatic remedy, castor oil, lately somewhat discredited for internal use. This is one of the fifteen or so vegetable drugs which are included—in one form or another—both in the Ebers papyrus, believed to date from 1552 B.C., and in the *British Pharmacopœia* of A.D. 1953. It may well have been used for millenia before the papyrus was compiled (Bryan 1930). Sigerist (1951) suggests that primitive man probably found many of the "right" foods and drugs by instinct. We must assume, however, that the method of trial and error was no less important; for we know that instinct is by no means a certain guide in nutritional matters, and that if the ancients chose many of the "right" drugs for themselves, they also chose far larger numbers of "wrong" ones. Sigerist points out that the virtue of castor oil taken internally was always cathartic, and that it was originally given with incantations as part of the ritual of magico-religious medicine to expel evil spirits. "The day came when drugs were prepared and given without incantation, and this was the time when magic and medicine separated." We might perhaps argue that the unknown person who first administered a vegetable aperient medicinally without incantation, and the unknown person who swallowed it, were the active and passive participants in a pioneer clinical research. The Egyptians gave castor oil in the form of the seeds of the plant, which were chewed with beer (Dawson 1929, Bryan 1930). The use of the oil as a purgative is explicitly mentioned by Pliny, but although both the seeds and the oil appear in some of the oldest

* The Bradshaw lecture for 1954 delivered before the Royal College of Physicians of London on Nov. 11.

English herbals, it seems that orthodox physicians came (not without justice) to regard the seeds as excessively dangerous, and it was only when Dr. Peter Canvane, of Bath, reintroduced castor oil from the West Indies in 1764 that it returned to medical favour (Wootton 1910). The oil was admitted to the *London Pharmacopœia* in 1788, but the pharmacology of the castor-oil plant was not scientifically investigated until the late 19th century, when the properties of the poisonous protein, ricin, contained in the seeds, were studied by Paul Ehrlich and others, with far-reaching results for the sciences of toxicology and immunology (Dale 1954).

Castor oil, then, is one of the few remedies discovered empirically by the ancients which have been used more or less continuously until our own time. Others are opium, used as an anodyne; squill, used in cardiac dropsy (now largely replaced by the digitalis derivatives); and sulphur and mercury, used locally for skin diseases. Each of these has had an empirical reputation for nearly four millenia. Nor was the empiricism of the ancients entirely non-specific. Pelletierine, the active principle of pomegranate, which the Egyptians used against tapeworms, was shown in the last century to have a lethal action on these parasites; and it seems reasonable to assume that the empirical use of sulphur and mercury in primitive dermatology was not unconnected with the ubiquitous distribution of scabies and impetigo. It was Paracelsus, in the 16th century, who first acclaimed the use of mercury internally as a "sovereign" treatment for the "great pox," though he probably was not the first to try it for the purpose. As an internal remedy mercury seems to have achieved its widest fame (one can hardly say popularity) in the 17th and 18th centuries, when it was not only used extensively for venereal disease, but, as calomel, was also given in heroic and too often lethal doses for malaria, dysentery, and other fevers. In the early 19th century the misuse of mercury for gonorrhœa was attacked with characteristic vigour by Sir Astley Cooper (1823–24); but for syphilis mercury remained—and, properly used, rightly remained—the principal treatment until the introduction of salvarsan in 1910; and it was still widely used for syphilis when I was doing clinical medicine. Latterly, in organic combination, mercury has found a new field of utility as a diuretic in cardiac failure—a therapeutic innovation which itself derived from the empirical observation that mercury given internally increased the urinary flow.

I have spent some time discussing these empirical remedies to emphasise that the empirical method, despite its scientific shortcomings, has a number of genuine therapeutic achievements to its credit, and that a remedy is not necessarily bad just because it is old and has been evaluated by common experience rather than by critical trial. We need only remember that we owe indirectly to the empiricism of primitive and folk medicine such remedies of established reputation as quinine, digitalis, ergot, the salicylates, caffeine, emetine, and many others—the latest recruit to the list, I suppose, being rauwolfia.

In modern medical research the empirical observation still has a very important rôle to play—as a pointer to the need for, and often the way to, scientific investigation.

AUTHORITY

There is little that can be said in favour of Authority alone as a criterion of value in therapeutics, but it has at least contributed largely to the continuity of medical and pharmaceutical learning, whether the learning be sound or unsound. It certainly conferred undue longevity upon many fantastic ideas and theories and many useless and revolting formulæ, and it delayed for more than two centuries the application to therapeutics of the spirit of scientific inquiry which began to permeate other branches of Western thought at the Renaissance; the authoritarian attitude that what was good enough for Galen is good enough for us denied the legitimacy of the experimental approach to treatment. In Chinese medicine the restrictive influence of Authority has been still more prolonged; for to the Chinese, at any rate until recently, it was axiomatic that the ancients were always right. Thus the Chinese pharmacopœia showed a petrified stability for more than a thousand years, and this despite the fact that the Chinese anticipated by centuries many relatively recent discoveries of Western science, including anæsthesia, inoculation against smallpox, the liver treatment of pernicious anæmia, and the use of thyroid gland to treat cretinism (Wang Chi Min 1926). In the *Pen-Tsao Kang-Mu*, published in 1596 (three hundred and thirty years before the classic paper of Minot and Murphy), it is stated that "the liver stores blood and therefore liver is good for all diseases of the blood"—an excellent example of how one may be right for the wrong reason. The use in China of sheep's thyroid for cretinism is said to date at least from the 6th century A.D. To China, also, we owe Ma Huang, the plant from which ephedrine is derived (Wong and Wu-Lien-Teh 1936), though there is no evidence of its use for asthma before the present century, and it may have been popular rather for its analeptic action.

Reverting to Western medicine, it is tempting to discuss some of the long-lived therapeutic fallacies for which Authority was responsible, but time will not permit. The case of antimony deserves mention as an example of the fluctuating opinion of Authority about a medicament now known to have real value in a limited field. At least one ointment containing antimony is included among the formulæ in the Ebers papyrus (Bryan 1930). The native antimony sulphide has been a popular cosmetic ("eye black") among Eastern women from remote ages, and the metal and its salts had a peculiar fascination for the alchemists. As an internal remedy antimony was lauded by Paracelsus, and at the beginning of the 17th century it became for a while one of the most widely used medicines after being acclaimed in the curious publication called *The Triumphal Chariot of Antimony*, which may have been based upon the teachings of Paracelsus (Wootton 1910). This book is of doubtful authorship though it was attributed to a 15th-century monk named Basilius Valentinus, concerning whom there is told a familiar story which is, none the less, so good that one wishes there were better evidence that he had really existed; he would then deserve credit for carrying out perhaps the earliest deliberate therapeutic trial in a uniform group of subjects, albeit a wholly unsuccessful one.

According to this legend, Brother Basilius noticed that some pigs that had eaten food contaminated with antimony used in his alchemical experiments became very fat as the result of developing a voracious appetite after the purgative action had passed off. He therefore decided to try the same treatment on some of his fellow monks who were emaciated after prolonged fasting; he seems wisely to have used himself as a control (Read 1936). Unfortunately the monks given the antimony all died, and so—says the legend—the metal, which had previously been known as stibium, acquired the common name of antimony (*anti-moine*) or monk's-bane.

Nowadays, of course, we reverse the pharmacological order: we test our antibiotics in man before using them to fatten pigs.

Wootton and others have pointed out that the etymological part of this story is palpably false, since the name antimonium had been used at least as early as the 11th century. Be that as it may, the indiscriminate prescription of antimony in medicine made so many people ill that the drug fell into disrepute and was actually banned by the Faculty of Medicine in Paris, until it received its *lettres de noblesse* (the highest blessing of Authority) through being given to King Louis XIV during an attack of typhoid fever from which he recovered in 1657—one of the more famous of many historic examples of the *post hoc ergo propter hoc* fallacy (Haggard 1929). After

this the drug—mainly in the form of tartar emetic—came back into general use, which inevitably led to its general misuse. In the 19th century it again declined in favour, although antimonial wine was widely prescribed as a popular and probably harmless diaphoretic; and in the present century the specific effects of antimony compounds in kala-azar and schistosomiasis—the true chemotherapeutic uses of the metal—have been demonstrated.

Nowadays we still have the voice of Authority to complicate our assessment of remedies; it takes the form of the Press Conference, of premature newspaper publicity, and of advertisements of the testimonial type.

EXPERIMENT

Turning to the history of experiment in therapeutics: if we except the legend of Valentinus, and the much earlier adventures in human toxicology of King Mithridates of Pontus, there is little evidence in the literature of any deliberate attempt to test the value of a method of treatment before the 18th century. Despite the lack of surviving reports, however, there is circumstantial evidence that some set trials of medicaments must have been made. Avicenna's *Canon* (c. A.D. 1000) gives rules for the testing of drugs in paired cases of uncomplicated disease, although in documents hitherto translated there is no record of their application (Bull 1951). Roger Bacon in his *De erroribus medicorum* (c. 1268), excuses the physicians of his day for their inability to perform repeated experiments, because "the nobility of the material" with which they work (the living human body) will not permit of mistakes. A similar opinion was expressed by Lauder Brunton in the 19th century, and it is not surprising that we hear sympathetic echoes of it today.

One of the earliest and most famous of recorded comparative trials was that carried out, unintentionally, by Ambroise Paré in 1537 when treating the wounded after the capture of the castle of Villaine. Having run out of the oil which in those days was applied boiling hot to cauterise wounds, he applied a bland "digestive" instead and found—after an anxious night—that the wounds he had not cauterised looked much the better next day (Packard 1925). Paré, a brave iconoclast, also challenged Authority by showing the inefficacy of the Bezoar stone and of alleged Unicorn's Horn as antidotes to poisons—the former by a Mithridatean experiment upon a condemned criminal who had been given corrosive sublimate as an alternative to hanging. We all know, of course, that it usually takes much more than one negative experiment to explode a popular therapeutic fallacy, and it is certain that both Bezoar stone and the Unicorn's Horn (which in practice usually meant powdered rhinoceros horn or elephant ivory) were used long after Paré's time; Elgood (1951) tells us, indeed, that the antidotal properties of Bezoar stone are credited in Persia, its country of origin, even today.

The outstanding therapeutic event of the 17th century was the introduction to Europe by Jesuit missionaries of Peruvian bark (cinchona). It had a hostile reception from Authority, partly because of suspicion of the Jesuits, but mainly because "its acceptance meant an overthrow of Galenical theory" (Bull 1951). Thomas Sydenham was one of the first physicians in the Eastern Hemisphere to prescribe the bark for intermittent fevers and he must have had demonstrable success with it in malaria; but for many years it was used chiefly in secret febrifuges sold by quacks. It is interesting to note, in this connection, that among the claims made by the Rev. Edward Stone for willow bark (salicin) in his letter to the president of the Royal Society in 1763 was that as an antipyretic it was a satisfactory substitute for the rare and expensive Peruvian bark, which by this time was being widely (and probably rather indiscriminately) used for fevers, to the detriment of hospital budgets (Gross and Greenberg 1948). Quinine was isolated from Peruvian bark in 1820, but although it has deservedly been regarded ever since as a "specific" against malaria, decisive evaluation of its merits and limitations has been possible only in our own time, and its action as a suppressive was first critically examined in planned tests during the second world war (Fairley 1945).

In the 18th century we find examples of an altogether more scientific approach both to the treatment and the prevention of disease than had obtained previously; and there are some classical instances of assessment by deliberate experiment. I can only refer very briefly to four of these before going on to describe the present-day experience of the Medical Research Council in organising clinical trials.

Firstly, there were the experiments in *smallpox inoculation* carried out to the orders of Queen Caroline in prisoners in Newgate and, when it seemed safe, in "charity children," before she would allow the Royal children to be inoculated (Sloane 1756). Luckily, these experiments were successful, in that the subjects were protected without any serious ill effect; they are interesting as perhaps the earliest example of a prophylactic trial in volunteers, who, in those days, were rewarded for their services either with their lives if they were condemned criminals or, in the case of the children, by money or other bribes.

Secondly, though much later in the century, there were Jenner's beautifully reasoned and critically observed trials of *vaccination with cowpox*.

Thirdly—and perhaps more germane to the particular theme of my lecture—there is William Withering's monumental ten-year study of the *foxglove* as a remedy for cardiac dropsy, which is notable for his emphasis on the use of "unselected cases" and for his observations of the effect on the pulse-rhythm and the urinary output, as yardsticks to check the validity of subjective improvement (Withering 1785).

And lastly, there is James Lind's historic controlled trial of the value of oranges and lemons in curing *scurvy* in sailors aboard *H.M.S. Salisbury* at sea in 1747, which as I indicated earlier, appears to be the first authenticated example of a therapeutic experiment with matched controls (Stewart and Guthrie 1953). Lind's study, first published in 1753, was so carefully planned and gave such clear proof of the value of a method of treatment which had already been used sporadically and empirically for some two hundred years, that it seems strange that its practical implications were not immediately realised. In fact, however, it was not until 1795 (the year after Lind died) that lemon juice was issued regularly to ships of the Royal Navy.

I must now turn abruptly to the present day.

Clinical Trials under the Medical Research Council

My own experience in the organisation of clinical trials dates from 1931, when the Medical Research Council set up a Therapeutic Trials Committee, in response to a request by the Association of British Chemical Manufacturers for an authoritative body to arrange clinical tests of new remedies which in laboratory experiment had given promise both of therapeutic value and low toxicity.

The conditions governing the Committee's work were agreed between the Council and the Association, and —although the Therapeutic Trials Committee itself no longer exists—they have formed the basis on which the Council have considered applications for clinical trials ever since. The most important are (1) that the nature and composition of the remedy must be disclosed by the applicant (though he is not, of course, required to disclose details of its manufacture); and (2) that the Council reserve the right to authorise publication of the results whatever their nature, if they believe publication to be in the interests of the medical profession and the public. In general, the tests organised by the Therapeutic Trials Committee were concerned only with entirely new remedies, mostly consisting of single chemical substances in pure form; minor modifications and improvements of known remedies were excluded from this scheme, and so were mixtures of two or more drugs, partly because of the obvious difficulty of apportioning credit for the action in the case of a mixture. Emphasis was laid on

the desirability of remedies being submitted to the Committee *before* they were placed upon the market, so that the manufacturer might be saved embarrassment if the results of the tests were unfavourable. Once the Committee had authorised publication of a report showing a drug to have value for a particular purpose, the manufacturer was encouraged to place it on the market so as to make it generally available; on this basis it was usually left to the private enterprise of independent investigators to test the same drug for a different purpose or to test modifications of it for the original purpose.

Among the important drugs which were successfully launched into practical medicine by reports to the Therapeutic Trials Committee were: calciferol (Spence 1933); digoxin (Wayne 1933–34); 'Prontosil' (Colebrook and Kenny 1936), which had been taken hardly beyond the experimental stage in Germany, its country of origin; sulphanilamide (Colebrook and Purdie 1937, Snodgrass and Anderson 1937); and stilbœstrol (Bishop, Boycott, and Zuckerman 1939, Winterton and Macgregor 1939, Kellar and Sutherland 1939).

These investigations were all of a kind in which clinical appraisal of progress could be backed by instrumental or laboratory criteria, so that it was possible to get a decisive answer without the use of untreated controls. In other inquiries sponsored by the Committee, such as a combined research at several centres into the value of antipneumococcal serum in lobar pneumonia—carried out in the pre-sulphonamide era, 1930–33—comparable control patients not receiving the test treatment were included (Reports 1934); and it was early realised that the medical statistician is a valuable member of the planning team, even when the nature of the investigation is not such as to require large numbers of subjects. His rôle in regard to the investigation should be that of obstetrician, rather than morbid anatomist, for it is unfair to expect him to extract scientific knowledge by performing a kind of mathematical post mortem upon the numerical remains of a badly planned study.

Hill (1954) has recently discussed the proper relationship between the statistician and his clinical colleagues in the arrangement of therapeutic trials; he points out that the responsibility for deciding upon the type of case to be treated, the diagnostic criteria, the dosage of drugs to be used, and the methods of determining the patients' response must always rest with the clinicians, and that chief use of the skills of the statistician, collaborating with them, is to assist in designing the type of experiment based upon their views which is most likely to show whether the treatment, *when applied as agreed*, does or does not give the results expected of it. To be effective the arrangement between clinicians and statisticians must be a scientific partnership, and never, in any circumstances, a dictatorship by one party against the other's wishes. Perhaps the most satisfactory arrangement of all is for the clinician himself to acquire the skills which the statistician is always so willing to impart, so that the rôles of the two experts may be combined in one individual. I would have thought it unnecessary to mention that these skills may include the preparation of suitable record forms for the tests, had not Prof. Lancelot Hogben (1954) implied in a recent article that this wise measure is commonly neglected.

THE WAR

During the war years the Therapeutic Trials Committee, which had become of unwieldy size, was allowed to lapse and the Medical Research Council instead appointed special committees to organise tests of particular remedies or methods of treatment. The most active of these was the Penicillin Clinical Trials Committee, which was appointed to extend the pilot work done with penicillin at Oxford and elsewhere, and to examine the value of the new drug in diseases for which it had not hitherto been tried. Memorable among the many investigations sponsored by this committee was the large-scale trial at fourteen centres of the value of penicillin in subacute bacterial endocarditis, which was coördinated by Prof. R. V. Christie; the successive reports on this long-term study are noteworthy not only for the care with which the work was done, but also for the modifications of dosage which had to be introduced in the light of new knowledge acquired during the course of it, and as penicillin became more freely available (Christie 1946, 1948, 1949, Cates and Christie 1951). For obvious reasons it was not considered justifiable to withhold penicillin for research purposes from gravely ill patients who needed it, but in subacute bacterial endocarditis the invariably fatal outcome of the untreated disease provided a valid retrospective control; and the same applied in only slightly lesser degree to the trials of penicillin in staphylococcal septicæmia and other dangerous infections. Attempts were made by the War Wounds Committee to get statistical data on the value of the sulphonamides and of penicillin with and without antitoxin in preventing and treating gas-gangrene, but the circumstances of war did not permit a decisive experiment.

POST-WAR POLICY

When the Council came to reorganise their arrangements for promoting clinical trials at the end of the war, it was realised that the subject of therapeutics had advanced so rapidly that no single directing committee such as had served before the war would meet the need, and the policy, adopted during the war, of appointing special committees to cover particular parts of the field has been continued. Another beneficial change from the pre-war arrangement is that, whereas the Therapeutic Trials Committee used to invite independent clinicians to test remedies on its behalf, and to report to the Committee on the results—which sometimes was rather a slow process—the clinicians taking part in the trials organised by the Council during and since the war have been brought right into the centre of the scheme by themselves being made members of the directing committees or of coördinating working parties; this has helped to maintain their interest and to accelerate progress, which has been further assisted in several important instances by the appointment by the Council of special coördinating officers for the tests. Apart from the need to initiate trials of new medicaments first prepared in this country—such as the methonium drugs—it has been necessary to arrange confirmatory tests of the powerful new series of antibiotics and hormones which have been prepared in America and launched upon the market in that country with reports which, while sometimes inconclusive, have been sufficiently encouraging to create an urgent demand for the drugs to be made available here.

CONTROLLED TRIALS IN TUBERCULOSIS

First among these drugs was streptomycin, which American evidence had shown to be capable in some cases of saving life and restoring health in tuberculous meningitis and miliary tuberculosis. As soon as even small trial quantities of the antibiotic were obtainable for the United Kingdom, the Council appointed a special committee, under the chairmanship of Dr. (now Sir) Geoffrey Marshall, to organise tests of streptomycin in these and other forms of tuberculosis. Thanks to the willing efforts of clinicians and pathologists at some eight centres, whose studies were effectively coördinated through the tact and energy of Dr. P. D'Arcy Hart and the late Dr. Marc Daniels, the committee was quickly able to confirm and extend the American results, in regard to the uses and limitations of streptomycin in tuberculous meningitis and acute miliary tuberculosis, and the Council to recommend the Ministry of Health

to make the drug widely available for the treatment of these forms of the disease (Reports 1948a, 1950a).

The uniformly fatal outcome of these conditions if untreated had made it unnecessary—and unjustifiable—to include untreated controls; but the position was very different in regard to pulmonary tuberculosis, with its variable course and general tendency to spontaneous improvement (Daniels 1951). The shortage of streptomycin in Britain at the time (which was so distressing from the humanitarian point of view) here proved scientifically advantageous, for it allowed the Committee to arrange, with a clear conscience, a rigidly controlled trial of the value of bed rest with streptomycin, as compared with bed rest alone, in young adults with rapidly advancing bilateral pulmonary tuberculosis unsuitable for collapse therapy; important features of this investigation were that patients whose condition satisfied the agreed criteria were allocated to the streptomycin or control group by methods of random selection, and that the X-ray findings were assessed by experts who were unaware of the group to which the patient belonged (Reports 1948b). This and other studies organised by the Committee provided standards of assessment for streptomycin not hitherto attained even in America—for the very fact that the drug was so freely available there made it difficult for American clinicians to undertake controlled trials.

Since then the Committee, with the coöperation of an increasing number of investigators and centres, has been able to apply similarly strict standards of comparison to the assessment of other drugs and combinations of drugs against tuberculosis. First the Swedish drug *p*-aminosalicylic acid (P.A.S.) was compared with streptomycin, and its use in delaying the development of streptomycin resistance was shown (Reports 1950b, 1952a, Daniels and Hill 1952). Then, when isoniazid became available, the committee was able to arrange large-scale tests of this substance in comparison with streptomycin and P.A.S. and in combination with each of them (Reports 1952b, 1953a, *b*, c and d), and to determine the best combination of drugs for the treatment of tuberculosis of different types with least risk of producing drug resistance (Fox 1954, Hart 1954). One of the major conclusions from this extensive programme of clinical and laboratory tests, which has been in continuous evolution for over seven years, and has included long-term follow-up observations (Fox et al. 1954), is that none of the existing chemotherapeutic agents against tuberculosis should be used alone, because the rapid development of microbial resistance in that event may limit its action and prevent its successful use in later combined therapy (Mitchison 1954). In all these studies the effective application of statistical techniques has been a vital factor in giving decisive results.

In some fields of medical research, such as the study of lung cancer, the medical statistician has had the rôle of pioneer in exposing new vistas of knowledge for exploration by workers in other disciplines. It would in many ways be an advantage if his aid were sought in the planning of the first clinical trials of a new remedy, and if manufacturers could be persuaded to withhold their products from the market until these had been clinically investigated with statistically adequate controls. As things are, however, it seems likely that manufacturers will generally still prefer to launch their remedies on the basis of pilot studies of a more exploratory kind, and that the function of the statistically controlled inquiry in this field will usually be confirmatory rather than innovational. It will, none the less, be indispensable for the true evaluation of many new methods of treatment, surgical as well as medical. Nowhere is it more important than in studies of the treatment of a disease such as pulmonary tuberculosis with variations on a theme of streptomycin or of isoniazid, where only by the strictest criteria is it possible to show the advantages of one régime versus another, against a background of a very variable natural history.

OTHER TRIALS

In other parts of the Council's post-war programme of therapeutic trials, coöperation between the clinician and the medical statistician has been no less effective. Examples of such joint efforts have been the trials of some of the newer antibiotics in the treatment of pneumonias, whooping-cough, and infantile enteritis organised by the Antibiotics Clinical Trials (Non-Tuberculous Conditions) Committee (Reports 1951, 1953 e and f), and the extensive studies arranged by special committees and panels of the Council to test the actions of cortisone and corticotrophin in some of the many diseases for which these hormones have been recommended. Especially useful and informative have been the controlled trials of cortisone and other drugs in the chronic rheumatic diseases, which have been arranged by a joint committee of the Medical Research Council and the Nuffield Foundation, under the chairmanship of Sir Henry Cohen. The recently published study by this committee of the respective virtues of cortisone and aspirin in early cases of rheumatoid arthritis gave results which, though disappointing to those whose hopes of cortisone had risen unduly high, provided a salutary warning against the unnecessary and indiscriminate use of this powerful and potentially dangerous remedy before more familiar methods of treatment have been tried and have failed (Reports 1954).

Finally, the application of statistical skills in the clinic has been decisive in exploding the claims made for certain methods of treating minor ailments such as the common cold. In these studies it has been possible to carry out "blind" tests, in which neither the patient nor the doctor knows whether the test or control treatment has been given, the information under this heading being retained by an independent third party until the results have been analysed. That, of course, is the ideal method of assessing a treatment, when it is ethically justifiable. Blind tests of an antihistaminic drug against the common cold in over 1500 volunteers failed to show any material benefit from the treatment (Reports 1950c); the same experiment gave the more surprising result that the incidence and nature of the side-effects reported were very similar in the treated group and in the control group receiving inert tablets—a vivid demonstration of the importance of psychosomatic factors as a complication in the assessment of remedies (cf. Wolf and Pinsky 1954, Wayne 1954). In clinical trials of treatments for the common cold it has been found particularly desirable that the nursing staff should not know which volunteers have had the test treatment and which the control, for an innocent remark by a knowledgeable nurse to a subject—that he *looks better or worse* this morning, as the case may be—can influence the subject's report to the investigator on his progress and thus jeopardise the success of the experiment.

I am only too well aware that in this necessarily brief survey of clinical trials in the present century I have had to confine my description to investigations with which the Medical Research Council have been concerned, omitting reference to the many admirably planned clinical tests that have been carried out by independent investigators in this country, and by workers in other countries, notably the United States and Scandinavia. Moreover, I have dealt mainly with trials in large groups of patients or volunteers, to the exclusion of those intensive studies in what Gold (1952) and Gaddum (1954) have described as "clinical pharmacology," by which the methods used to assay drugs in laboratory animals may be applied no less effectively in man. Nor have I discussed what Hogben (1954)

calls the "self-controlled" trial. These techniques would themselves provide a fascinating subject, but I regret that I have neither time nor scientific competence to review them as they deserve, and must conclude only with a brief general discussion of the ethics and some of the limitations of clinical trials.

The Ethics of Clinical Trials

In the case of a trial of a common cold treatment in volunteers, who have been told that they may or may not receive the test substance, no ethical difficulties arise, provided that the investigator is satisfied that both the test and the control material are safe. It is very different when the doctor is testing, in a serious disease, a new remedy which may possibly make the difference between life and death, or between prolonged illness and swift recovery. It seems to me that the ethical problem in that case has two essential components: firstly, the doctor must never give his patient any treatment which he would not be willing to take himself in similar circumstances; secondly, he must be genuinely *agnostic* about the value of any remedy of which he contemplates making a controlled test. If he frankly does not know whether a treatment will be beneficial or not, he is entitled to withhold it for test purposes if by so doing he can clarify the issue, and he may even on occasion embark upon a blind trial without the patient's knowledge, provided that the patient also gets the benefit of the best orthodox treatment for his disease and can be removed from the trial or control series if his condition demands it. Once, however, a doctor is convinced, in his scientific conscience, that a new treatment which is freely available not only represents a substantial advance upon earlier methods but is unlikely to cause harmful side-effects, he cannot in justice refuse to give it to any patient he believes to need it.

On the other hand, where the value of a treatment, new or old, is doubtful, there may be a higher moral obligation to test it critically than to continue to prescribe it year-in-year-out with the support merely of custom or of wishful thinking. It is gratifying to learn, in this connection, that the College of General Practitioners is considering the possibility of arranging controlled tests of some of the "symptomatic" remedies for common ailments that have been used—on rather slender grounds—for generations. The more our therapeutic armamentarium is tested by such critical standards the better, and it is fitting that the practising doctor, who is likely to be most familiar with the natural history of the diseases for which such drugs are used, should himself take a leading part in the assessment.

Limitations of Clinical Trials

A limitation of even the best-planned clinical trial is that it can hardly be of sufficient scope and duration to disclose the risk and incidence of those long-term toxic effects—such as aplastic anæmia—which occasionally follow the prolonged use of some of the powerful medicaments of the present day, especially in patients who have been sensitised by a previous course. It is improbable, moreover, that any organised trial of reasonable scope and duration would have exposed the hazard of conditions such as staphylococcal enteritis which sometimes result from the unrestricted multiplication in the intestine of microbial strains that have become resistant to penicillin or other broad-spectrum antibiotics. These numerically very infrequent dangers are likely to be revealed only in the course of the widespread use of the medicament in practice, though in the case of certain compounds some indication of a liability to attack the bone-marrow may be given by the chemical structure.

It is to be hoped that the improved facilities for carefully observed therapeutic trials of new remedies that are likely to become available with the increasing development of clinical research in the National Health Service will help both to bring these dangers to notice at the earliest possible stage and to provide means by which they may be minimised or even eliminated. We have certainly had some unpleasant surprises of this type in recent years, and with the continually accelerating tempo of the development of powerful new remedies it can hardly be doubted that there are similar shocks ahead of us; for a powerful remedy is almost of necessity also in certain circumstances a powerful poison. It is in carefully noting and publishing his observations on this kind of hazard that the doctor using these drugs in routine treatment can render important service to the medical profession and the public—and, be it added, to the pharmaceutical profession and industry. His is the ultimate responsibility for the care of the individual patient. The most that the scientific investigator concerned with results in groups rather than individuals can do is to show the doctor that the odds are heavily in favour of a remedy being safe when used as directed, and of its indeed doing what he wants it to do and nothing more.

Many of my colleagues have helped me in preparing this lecture, and I would like to thank them all. I am particularly grateful to Dr. J. P. Bull, director of the M.R.C. Industrial Injuries and Burns Research Unit at the Birmingham Accident Hospital, who, as an aid in tracing the historical references, kindly lent me his excellent unpublished thesis, a Study of the History and Principles of Clinical Therapeutic Trials. For help in finding some of the more elusive references, I am greatly indebted to Mr. L. M. Payne, assistant librarian of the Royal College of Physicians.

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THE TREATMENT OF TUBERCULOUS MENINGITIS WITHOUT INTRATHECAL THERAPY

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WHEN, in 1952, isoniazid was introduced as a supplementary or alternative remedy for tuberculosis, we had to consider it in relation to the merits and demerits of existing methods of treatment.

Five years' experience of streptomycin in tuberculous meningitis had demonstrated that it could often save life; but there were certain serious drawbacks in the technique that had to be employed. Because intramuscular injection cannot be relied on to give an adequate antibacterial concentration in the cerebrospinal fluid (C.S.F.) the streptomycin had to be given intrathecally, and this necessitated daily lumbar punctures for not weeks but months on end—a heart-rending experience to witness.

Isoniazid, given orally, readily and rapidly diffuses into the C.S.F. both in health and in disease (Fletcher 1953, *Lancet* 1952, *British Medical Journal* 1952) and probably also gains direct access to tubercle bacilli within the cells. This raised the possibility that tuberculous meningitis could be effectively treated without daily lumbar puncture; and it seemed justifiable to test this possibility by giving some patients only intramuscular streptomycin and oral isoniazid, no intrathecal injections being given unless some special indication presented itself.

Since September, 1952, 15 children have been treated to this plan, and in none has it been advisable or necessary to revert to intrathecal streptomycin. Though the period of study is short, the results to date are very encouraging.

Scheme of Treatment

Streptomycin (20 mg. per lb. of body-weight daily) was given in two doses (twelve-hourly) by intramuscular injection.

Isoniazid (4 mg. per lb. of body-weight daily) was given in four doses (six-hourly) by mouth.

The isoniazid was given daily and without intermission for five months or sometimes a little longer. In the first few cases streptomycin was injected daily for four months, and then twice weekly in a dose of 0·5–1·0 g. for a fifth month. As confidence in the success of the treatment increased, streptomycin was given daily for only three months, and then twice weekly for two.

p-Aminosalicylic acid (P.A.S.) was used occasionally but only for short periods. My experience with P.A.S. may have been unfortunate and different from that of other workers, but its handicaps and drawbacks appear to me to outweigh its potential advantages. Particularly in younger children it has caused anorexia, nausea, and vomiting, and has had to be stopped. To use a drug which hinders and depresses nutritional progress seems so contrary to sound therapeutic principles that P.A.S. was omitted from this trial.

The Patients

The 15 cases treated without intrathecal streptomycin were not selected but comprised all the cases of tuberculous meningitis under my care in the last two years.

Owing to increased awareness of the importance of early diagnosis most of the cases have been received much earlier than in the past, and naturally this has improved the prognosis. The ages of the patients ranged from 11 months to 13 years, and their illness before admission had lasted from four days to five weeks. Though no child was frankly comatose on admission, consciousness was definitely impaired in 6. Bacteriological proof of the diagnosis was not forthcoming in all the cases; but, in those in which it was not, the clinical picture and the changes in the C.S.F conformed to the generally recognised pattern of tuberculous meningitis (Smith and Vollum 1954). Of the 15 children 2 had been previously treated for tuberculous meningitis four and three years earlier and were readmitted with a relapse. Radiography showed a primary complex or a miliary spread in 6 children on admission.

Results

Of these 15 children 1 has died, and 1 is mentally and physically retarded. Thus up to now, with a follow-up period of from five to twenty-five months after treatment started, 13 of 15 children are showing an eminently satisfactory result.

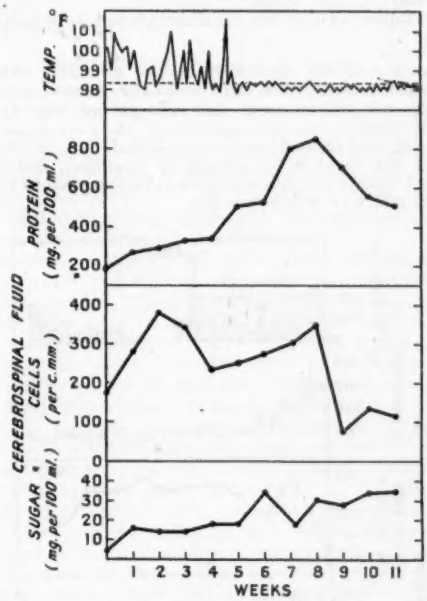

Fig. 1—Temperature and C.S.F. in case 1.

Some of my colleagues at the Birmingham Children's Hospital (Oldham et al. 1954) have completed a long-term follow-up of the 92 children treated for tuberculous meningitis in this hospital from Sept. 1, 1947, to Jan. 1, 1952. The survivors were observed for periods ranging from two to six years from the beginning of therapy. The over-all survival-rate was only 38%, but the survival-rate of the 48 cases treated in 1949–51 rose to 54%. Moreover in only 17 (18% of the total followed up) was recovery complete and uninterrupted. Another important point brought out in this survey was the

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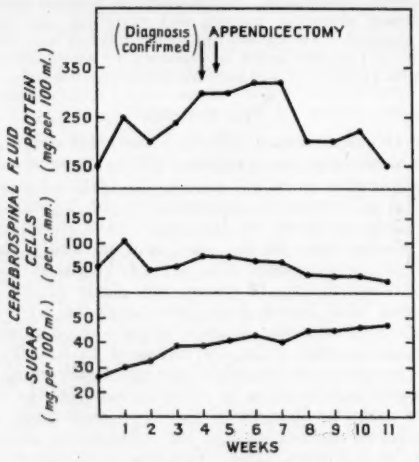

Fig. 2—C.S.F. in case 2.

extremely bad prognosis in infancy. Of 13 infants treated up to July, 1953, only 1 had survived, and she was mentally retarded.

My series includes 1 infant, aged 11 months on admission, who after an initial stormy and perturbing clinical course is now (four months later) making very satisfactory progress.

The following case-records illustrate points of particular note.

Case 1.—A boy, aged 9 years, had a steadily mounting C.S.F.-protein level, which eight weeks after admission reached 850 mg. per 100 ml., with 350 cells per ml. (fig. 1). His general clinical state was satisfactory, the C.S.F.-sugar level was rising, and his temperature had abated. It was therefore decided not to alter the scheme of treatment, and within the next three weeks his C.S.F.-protein had dropped to 100 mg. per 100 ml., with cells 60 per ml.

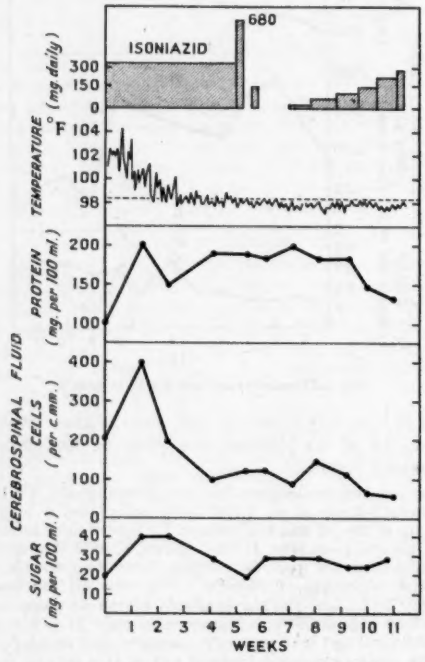

Fig. 3—Isoniazid dosage, temperature, and C.S.F. in case 3.

This boy also had a choroidal tubercle, which slowly healed during treatment. He was discharged from hospital sixteen months ago, and when seen recently was in excellent health.

Case 2.—A boy, aged 9 years, developed acute appendicitis a month after the start of treatment. His postoperative progress was uneventful, no additional chemotherapy was prescribed, and there was no exacerbation of his meningitis (fig. 2). He has now been home for nineteen months and remains very well.

Case 3.—A boy, aged 12 years, admitted in January, 1954, presented an intricate and perplexing problem. During the first four weeks' treatment his progress was slow, he was irrational and probably hallucinated at times, and, although his temperature had subsided, his C.S.F.-sugar was falling again. His dose of isoniazid was therefore increased from 4 to 8 mg. per lb. of body-weight daily, whereupon his mental confusion almost immediately became more pronounced. Within twenty-four hours of stopping the drug he became quite rational. Two days later he was again given his original dosage of isoniazid, and once more he rapidly became mentally

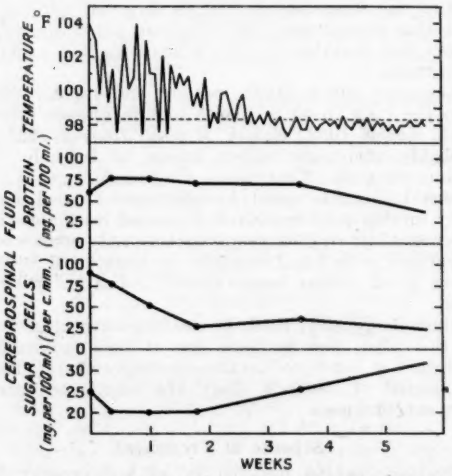

Fig. 4—Temperature and C.S.F. in baby, aged 11 months, with tuberculous meningitis and extensive primary tuberculous lesion with slight miliary spread.

confused. This was thought to indicate sensitivity or intolerance.

To avoid having to give intrathecal streptomycin, an attempt was made to desensitise him, the probable advantageous action of pyridoxine in such cases not being known then (Ungar et al. 1954). This was successfully achieved by starting with a dose of 0·5 mg. per lb. of body-weight and slowly and cautiously increasing it to almost 4·0 mg. per lb. of body-weight daily. Thereafter his progress was uneventful on this dosage, and he was discharged home and has remained well for the last four months (fig. 3).

Side-effects

Except for this case, no untoward side-reactions or toxic manifestations were observed that could be attributable to isoniazid. Isoniazid usually appears to promote a feeling of well-being and contentment in these patients. Once they have settled down and are over the acute stage of meningitis they are the jolliest and happiest children in the ward. This is in striking contrast to the nervous, apprehensive, and worrying appearance and behaviour they usually presented before isoniazid was used.

Temperature

In many of these cases the temperature subsided relatively slowly, taking in a few cases up to five or six weeks to return to normal, but this does not seem to have been to the disadvantage of the patient. This protracted or severe pyrexia was well illustrated in a baby, aged 11 months (fig. 4). After the first two weeks

in hospital his progress was uneventful. It may be significant that not only did the baby have an extensive primary complex with a slight miliary spread but also the family history was shocking: the mother was an open case of pulmonary tuberculosis awaiting admission to a sanatorium, and an elder child was already in hospital for treatment of a primary pulmonary infection with a sharp constitutional upset.

C.S.F.

On this therapeutic régime the C.S.F. takes a long time to return to normal (figs. 1–4), the average time being from two to four months. The C.S.F. does not necessarily reflect the clinical improvement of the patient and at times can be misleading. The help given by its analysis is limited, and lumbar puncture is being done less and less frequently on these children if their clinical progress is satisfactory. This seems to be in no way detrimental to their welfare.

Fatal Case

Case 4.—A girl, aged 2 years, had five days' history of drowsiness and apathy. There was no radiological evidence of a primary complex or of miliary spread. Treatment appeared to be without any influence on the meningitis, and she slowly lapsed into coma and died in four months. Necropsy confirmed the diagnosis, and there was also a small old calcified primary lesion in the left lung.

Mental and Physical Retardation

Case 5.—A boy, aged 2 years, with a scanty miliary spread in the lungs as well as meningitis, was semiconscious on admission and did not improve under treatment but slowly lapsed into coma. On this account he was given a course of intrathecal tuberculin (P.P.D.), after which he began to improve slowly. On discharge eight months after admission he could sit up, stand up, and say a few words. Seen seven months after discharge he had maintained improvement and was running about and talking well, but coördination of his hands was poor and he was mentally retarded.

Supporting Evidence

During the same period 18 children were treated at Little Bromwich Hospital, Birmingham, in a broadly comparable manner without any intrathecal streptomycin (F. L. Kerr, personal communication). 6 of these died, but 5 of them did so within a few days of admission. If these 5 cases are excluded as inevitable deaths, the results show 1 death in 13 cases. Of the 12 survivors 8 have been discharged from hospital and are clinically well.

These figures, so far as they go, compare favourably with the results obtained before isoniazid was available and when streptomycin had to be injected intrathecally for long periods.

Further evidence in favour of the use of oral isoniazid in tuberculous meningitis is provided by Anderson et al. (1953), Bulkeley (1953), Torres-Gost (1953), Kendig et al. (1954), Mackay (1954), Robinson and Ro (1954), and Waddell et al. (1954). If further experience confirms that when isoniazid is given, intramuscular streptomycin can safely be substituted for intrathecal streptomycin, treatment will be much simpler, and the little patients will be saved much pain and other suffering.

I am indebted to Dr. Clifford Parsons for the notes of two of these cases.

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THE DIAGNOSIS OF PYOGENIC LIVER ABSCESS

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THE treatment of pyogenic liver abscess is surgical. Its efficacy depends, however, on early recognition, and this is difficult. The 9 cases which are tabulated below occurred during eight years in three hospitals with a total of 1036 beds. The high mortality among them was associated largely with failure in diagnosis, and I examined the literature to find reasons for this. There seem to be several misapprehensions regarding the origins of liver abscess, its effect on liver function, and its clinical signs.

Of the reports published between 1942 and 1953, I found 44 which gave details allowing analysis. 40 were concerned with single cases only, and probably many of these had been published because treatment was successful. One report was of 14 cases, all the patients surviving; one was of 7 cases, all fatal; and no other report details more than 3 cases.

Including the cases I report here, the total is 56 males and 21 females, a distribution agreeing with the figures of Ochsner et al. (1938). The proportion dying was the same in both sexes. If we omit the series of McFadzean et al. (1953), we find that of 26 patients with single abscesses 23 survived, and of 34 with multiple abscesses only 14 survived. These figures also agree with previous experience.

Causes, Symptoms, and Findings

Of the 77 cases, no cause was found in 42, and in these unexplained cases the abscesses were twice as often single as multiple. Appendicitis was responsible in 14 cases, biliary infection (excluding cholangitis) in 6, peptic ulcer in 6, pancreatitis in 2, thrombosed hæmorrhoids in 2, and diverticulitis in 2; and there were single cases of pyogenic infection of a simple cyst, the scar of an amœbic abscess, and a traumatic hæmatoma.

The duration may be lengthy: periods of three or four months were not uncommon, and the maximum was eighteen months. Development of symptoms after a known cause may be delayed, and in at least 6 cases they were first observed more than four weeks (up to four months) after appendicectomy. In some cases, however, rigors are present from the outset, suggesting very early involvement of the portal system.

All the patients had fever, and chills or rigors were noted in 55, often with negative blood-cultures. Common sites for pain were the right upper abdomen, chest, and right loin, in that order. Respiratory symptoms were present in rather less than half the cases, and nausea, fairly often without vomiting, in a similar proportion.

A third of the patients had no enlargement of the liver, and in rather less than a third the liver was not tender. Three-quarters of them had no jaundice.

X-ray examination showed evidence of subdiaphragmatic disease in 35 cases of 55 thus examined. 16 cases had pleural effusion.

The blood showed a leucocytosis in the great majority of cases, but this was expressly stated to be absent in 5 cases. Blood-culture was reported in 43 cases but was positive in only 11.

Liver functions were reported in 43 cases. The urine contained an abnormal amount of bile in 18 cases out of 29. Parenchymal liver tests were abnormal in 10 cases out of 16, the serum-bilirubin or icterus index in 26 out of 38, and the alkaline phosphatase in 17 out of 21. The prothrombin level was significantly reduced in 7 out of 15 cases, and the total serum-protein level was reduced

ANALYSIS OF NINE CASES OF PYOGENIC LIVER ABSCESS

Case no.	1	2	3	4	5	6	7	8	9
Sex	F	M	F	F	F	M	F	M	M
Age (yr.)	64	61	51	30	61	72	68	63	11
Duration	8 wk.	?	3 wk.	3 wk.	24 hr.	2 mos.	2 mos.	2 wk	10 wk.
Outcome	Death	Death	Death	Death	Death	Death	Recovery	Death	Death
Rigors	+	0	0	+	0	0	0	0	+
Jaundice	0	+	0	+	0	0	0	+	+
Hepatomegaly	+	+	+	+	0	+	+	+	..
Leucocytosis	..	+	+	+	..	+	..	0	+
Flocculation	..	0	0	0	..	0	..	0	0
Phosphatase	..	+	+	0	..	0	..	0	+
Tenderness	+	+	+	+	+	+	+	0	0
Cause	Unknown	Pancreatitis	Appendicitis	Appendicitis	Gastric ulcer	Infected amœbic scar	Infected cyst	Infected hæmorrhoids	Appendicitis

+ = present 0 = absent .. = no record of examination

in 4 out of 18. The albumin/globulin ratio was reported in 5 cases, in all of which it was inverted without reduction of the total-proteins level.

These figures show that biochemical investigations do not necessarily provide clear diagnostic indications, for the biochemical findings may be normal when an abscess is present. Some workers have drawn particular attention to the alkaline phosphatase, and certainly this is often increased; but in 3 of the 9 cases here tabulated the alkaline-phosphatase levels were normal though the patient had extensive hepatic suppuration.

Conclusions

In a majority of the 77 cases here reviewed, pyogenic liver abscesses developed without any obvious cause. When a cause was found in the portal area, it was only 14 times in the appendix compared with 18 times elsewhere. Difficulty in diagnosing these other cases (Ochsner et al. 1938) should not prevent the recognition of liver abscess. The period of development may be long, and the condition will often need to be considered in the differential diagnosis of subacute or chronic liver disease. In the cases I have collected, the chief symptoms were fever, chills or rigors, upper abdominal pain, respiratory disturbance, nausea, loin pain, and diarrhœa—in that order. Local physical signs were downward enlargement of the liver and tenderness, but both of these were absent in a third of the cases. Jaundice was present in only a quarter. Radiological examination showed hepatic enlargement in three-fifths of the cases examined. Leucocytosis was almost invariable, but blood-culture was sterile in three-quarters of the cases where it was done. Normal biochemical tests do not exclude liver abscess, and, though a raised alkaline-phosphatase level is a common finding (Hirschowitz 1952), the level can be normal in the presence of gross disease.

Pyogenic liver abscess will often be missed unless clinicians are aware that it may be present even when no focus of origin is discoverable, and unless they rely on clinical findings and radiological examination rather than on pathological investigations. High pyrexia and chills, commonly thought of as indicating portal pyæmia, may be a sign of localised liver disease, and diagnosis with a view to drainage should be constantly in mind.

ADDENDUM

Since the completion of this article, a 10th case has been seen, in a woman of 72, who on Oct. 31, 1954, was attacked by upper abdominal pain and vomiting with severe shivering, which ceased later. She was admitted to the Brighton General Hospital with the tentative diagnosis of liver abscess, and a solitary abscess of the right lobe of the liver was drained by Mr. Keith Powell on Nov. 14. Local tenderness and moderate leucocytosis, with considerable increase in urinary urobilinogen, were the only abnormal findings, other tests—alkaline phosphatase included—being within normal limits. No primary source of infection was discovered.

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AGAMMAGLOBULINÆMIA

A CONGENITAL DEFECT

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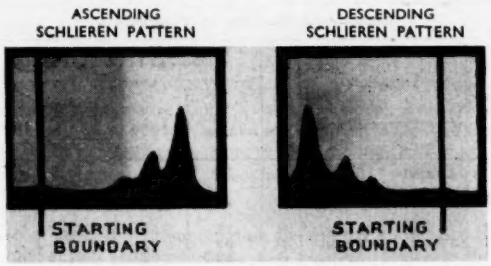
Schick and Greenbaum (1945) reported the case of an 11-year-old girl whose serum contained no gamma-globulin but who displayed no special susceptibility to infection. A year later Stern and Reiner (1946) referred to two children with hypoproteinæmia who had "almost complete lack of gamma globulin and were singularly free from infection." At that time I had the opportunity of examining two women who had an almost complete lack of gamma-globulin, the one under Prof. Howard Armstrong, then at the Peter Bent Brigham Hospital, and the other under Prof. Fuller Albright at the Massachusetts General Hospital. The presenting symptom of the first patient was of episodic œdema; neither had a special liability to infection and the second produced antibodies on challenge. Protein analysis of the sera of all these patients was carried out by the classical Tiselius technique.

Considerable interest has been aroused by the report by Bruton (1952) of a male child of 8 who had no antibody

PROTEIN ANALYSIS OF SERUM FROM VARIOUS SOURCES

—	Age (or period of gestation)	Sex	Total protein (g. per 100 ml.)	Albumin (g. per 100 ml.)	Globulins (g. per 100 ml.)		
					alpha	beta	gamma
Full-term infants (cord blood)[1] (mean values of group)	..	..	6·18	3·82	0·57	0·6	0·97 (fibrinogen 0·34)
Maternal blood (mean values of group)	..	..	7·17	3·56	1·26	1·62	0·72 (fibrinogen 0·47)
Normal adult (mean values [2])	..	..	6·7	4·04	0·79	0·81	0·74 (fibrinogen 0·34)
Bruton's case[3]	8 years	Male	6·4	4·2	1·14	0·965	0
Bruton's control [3]	..	..	7·4	4·2	1·16	1·03	0·97
Kekwick [4]	11 weeks	Female	4·5	2·38	1·1	1·07	0
Premature infant 1 (weight 22 oz.)	About 24 weeks	Male	4·3	2·30	1·1	0·9	0
Premature infant 2 (weight 21 oz.)	About 26 weeks	Female	5·0	3·2	1·1	0·7	< 0·1
Premature infant 3 (weight 31 oz.)	About 28 weeks	Male	5·0	2·9	0·7	0·65	0·73
Premature infant 4 (weight 34 oz.)	About 29 weeks	Male	4·0	2·25	0·6	0·5	0·6

1. From Longsworth et al. (1945).
2. From Dole (1944)
3. From Bruton (1952).
4. From Kekwick, quoted by Keidan et al. (1953).



Schlieren pattern of the serum of infant 2 after 4 hours migration.

Left: ascending pattern (δ anomaly to the left under starting bar, albumin peak to the right). Right: descending pattern (albumin peak to the left, ε anomaly, hardly visible, to the right).

response to bacterial vaccine or to natural infection and who appeared to have no circulating gamma-globulin. Janeway (1953) has collected fourteen patients, all boys suffering from recurrent bacterial infection, with a low or absent gamma-globulin. These patients responded to twice-weekly intramuscular injections of gamma-globulin with penicillin but not to penicillin alone.

Keidan, McCarthy, and Haworth (1953) gave a carefully documented account of a female infant, aged 11 weeks, whose serum, examined by the classical technique of Tiselius, showed no gamma-globulin. This child had developed a prolonged generalised vaccinia (a condition accurately described by Acland as long ago as 1906), and the outstanding and perhaps fundamental lesion was the absence of circulating antibody, as suggested by Hall, Cunliffe, and Dudgeon (1953). She died, despite treatment with massive doses of gamma-globulin and immune serum. The gamma-globulin did not contain detectable amounts of neutralising antibody for vaccinia, but the immune serum did contain neutralising antibody.

Through the courtesy of Dr. McCarthy it has been possible to analyse the serum-protein pattern of a small series of premature infants by the classical Tiselius technique. The analyses are shown in the accompanying table together with reported analyses which have been made with similar rigour. (Because of fallacies in quantitative data obtained by the filter-paper technique, analyses derived from it have not been included.) The figure shows the actual Schlieren patterns of the serum of premature infant 2.

The point of interest is the close resemblance of the protein pattern of the baby aged 11 weeks, and the boy aged 8 years, to that of the two smallest premature infants. The analyses of the serum of the baby and of the four premature infants were carried out on the same apparatus under identical conditions of protein concentration, buffer pattern, and current density, and are therefore technically strictly comparable. The analyses of the serum of premature infants 3 and 4 approach, but are not identical with, the analysis for the full-term infant by Longsworth et al. (1945). Assuming that they are not exceptional, these (admittedly limited) analyses suggest the possibility that the agammaglobulinæmia is due to persistence of the early fœtal pattern.

Brambell, Hemmings, Henderson, and Kekwick (1953), in their careful studies on the serum-proteins of fœtal rabbits, have shown that the fœtal serum-gamma-globulin at the 25th day of intra-uterine life is significantly lower than that of the mature animal. While it is dangerous to argue from one species to another, it is interesting to find a picture broadly in line. Brambell's work seems to suggest that in the rabbit there is a regular and progressive transfer of antibody from the maternal to the fœtal circulation. Moreover, it is known that the non-immune mother gives birth to a non-immune child.

Finally, it is important to keep in mind the fact that only certain antibodies are associated with that area of the gamma-globulin pattern which is observed to be deficient, and which appears to correspond to gamma$_2$, as defined by Alberty (1949), in the established cases of agammaglobulinæmia. One may expect, therefore, to meet persons with agammaglobulinæmia who are not prone to infection, and patients with hypogammaglobulinæmia who do no respond to replacement therapy with gamma-globulin calculated to make good the observed deficiency in protein pattern.

Summary

The absence of gamma-globulin in the circulating serum is not regularly associated with increased susceptibility to infection. The reason for this may be that the principal deficiency in agammaglobulinæmias is of the gamma$_2$-globulin, though some antibodies are almost certainly concentrated in the gamma$_1$-globulin. Analysis of four premature infants show an almost total absence of gamma-globulin at or before the 26th week. It is suggested that the anomaly described in the child and adult represents a persistence of a fœtal pattern.

My thanks are due to the biophysics department of the Lister Institute for the facilities they have extended me. I am grateful to Dr. F. O. MacCallum for drawing my attention to the report by Schleinberg (1954).

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RENAL CLEARANCE OF ENDOGENOUS PORPHOBILINOGEN IN MAN

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EVIDENCE put forward recently suggests that porphobilinogen injected parenterally in the rat is cleared from the blood at a rate similar to the expected glomerular filtration-rate (Goldberg and Rimington 1954, Goldberg 1954). I report here studies on the renal clearance of endogenous porphobilinogen in three cases of acute intermittent porphyria (two during an acute attack and one during a remission) and in one case of latent porphyria. The results suggest that in these patients also endogenous porphobilinogen was excreted by glomerular filtration with little or no tubular reabsorption.

Methods and Materials

CLINICAL

The Cases

Case 1.—Mrs. A., aged 23. Height 155 cm., weight 43·6 kg. Acute intermittent porphyria. This was her first attack. She had had recurrent bouts of abdominal pain, transient hypertension, and tachycardia for 6 weeks. There was weakness of her arms and legs. The experiment was done during the acute phase on a day when she was coöperative and had little abdominal pain. She excreted 215 mg. of porphobilinogen in her urine on that day.

Case 2.—Mrs. B., aged 23. Height 162 cm., weight 55·5 kg. Acute intermittent porphyria. This was her first attack. She had had severe abdominal pain and vomiting

for 3 weeks and had difficulty in passing urine. On the day of the experiment her symptoms had greatly improved and she excreted 52 mg. of porphobilinogen in her urine.

Case 3.—Mr. C., aged 29. Height 193 cm., weight 74 kg. Latent porphyria. Situs inversus totalis. Bronchiectasis. Traumatic epilepsy. He has never had symptoms suggesting acute intermittent porphyria, yet he excretes about 100 mg. of porphobilinogen in his urine each day. (Patient of Dr. Donald Hunter, London Hospital.)

Case 4.—Mr. D., aged 26. Height 175 cm., weight 65·5 kg. Acute intermittent porphyria in remission. A year ago he had a very severe attack with quadriplegia. He still has wasting of the small muscles of his hands. He excretes about 120 mg. of porphobilinogen in his urine daily. (Patient of Dr. E. Frankel, Wanstead Hospital, London.) Two separate experiments were made in this case: (*a*) clearance of endogenous porphobilinogen, and (*b*) simultaneous clearance of endogenous porphobilinogen and of inulin.

Cases 1 and 2 were patients in University College Hospital; and cases 3 and 4 were outpatients and had been admitted to the metabolic ward of University College Hospital the night before the experiment. All the patients were recumbent in bed throughout each experiment, except case 3, in whom the effect of postural change on the renal clearance of porphobilinogen, creatinine, and urea was investigated.

Food and Fluids

Each patient was given breakfast before the start of the experiment. Cases 1 and 4(*a*) in addition had a light lunch during the experiments. Cases 2, 3, and 4(*b*) fasted throughout the experiments. The patients were encouraged to drink water and orange-juice from an hour before till the end of the clearance periods.

Collection of Urine and Plasma

Urine was passed voluntarily by all the patients except case 2, who had to be catheterised at the end of the clearance period. The minimum of urine passed in any single clearance period was 230 ml. The mean of all such volumes was 544 ± 260 ml.

The experiments in every case were made between 7 A.M. and 5 P.M. In case 1 the urine excreted in 6 hours (from 11 A.M. till 5 P.M.) was collected, and plasma specimens were taken at 1, 3, and 5 hours after the start of the experiment. Case 2 emptied her bladder at 7 A.M. and was catheterised $4^1/_4$ hours later. Plasma specimens were taken at 1 and 3 hours after the start of the experiment. In cases 3 and 4(*a*) the patients had four and five consecutive 2-hour clearance periods beginning at 7 A.M. and 9 A.M. respectively. Plasma specimens were taken an hour after the start of each clearance period. In case 4(*b*) the clearance of endogenous porphobilinogen was studied for 2 hours (from noon to 2 P.M.). An intravenous inulin drip had been set up at 11 A.M., and inulin clearance was determined for the period 12.30–2.0 P.M. The inulin clearance recorded represents the average of three separate half-hourly inulin clearances recorded in this $1^1/_2$ hours. The minimum of urine passed during each half-hourly period was 194 ml., and the mean volume for the three periods was 240 ± 35 ml.

Urea and creatinine clearances were measured in addition to porphobilinogen clearances in certain cases (see table).

RENAL CLEARANCES IN PORPHYRIA

Case no.	Duration From	Duration To	Posture	Clearance of (ml. per min.) Creatinine	Urea	Endogenous porphobilinogen	Inulin
1	11 A.M.	5 P.M.	R	79	42	117	..
2	7 A.M.	11.15 P.M.	R	..	31	93	..
3	9 A.M.	11 A.M.	S	77	51	70	..
	11 A.M.	1 P.M.	R	92	69	105	..
	1 P.M.	3 P.M.	S	82·5	53	97	..
	3 P.M.	5 P.M.	R	91	73	104	..
4(*a*)	7 A.M.	9 A.M.	R	79	52	84	..
	9 A.M.	11 A.M.	R	64	54	85	..
	11 A.M.	1 P.M.	R	91	67	89	..
	1 P.M.	3 P.M.	R	87	54	89	..
	3 P.M.	5 P.M.	R	80	54	82	..
				Mean 80 ± 9·2	56 ± 5·5	86 ± 2·8	..
(*b*)	Noon	2 P.M.	R	..	..	90	..
	12.30 P.M.	2 P.M.	R	..	..	..	94

In case 4(*b*) the endogenous porphobilinogen clearance and the inulin clearance were measured simultaneously.
R, recumbent. S, standing.

BIOCHEMICAL DETERMINATIONS

Porphobilinogen was determined in urine and plasma by methods described by Goldberg (1954). In every case 1·5 ml. of 20% (*w*/*v*) trichloracetic acid was added to 6 ml. of plasma.

Weighed quantities of crystalline porphobilinogen were added to distilled water and normal human plasma, sufficient to give concentrations in the same range as that of the specimens of urine and plasma to be tested. The densities of these standard aqueous and plasma solutions when treated with Ehrlich's reagent were measured at 552 mμ on a 'Unicam' spectrophotometer (S.P.500), and calibration curves were drawn, the spectrophotometric readings being plotted against known concentrations of porphobilinogen in water and plasma.

The urine in each case was diluted 25–100 times with distilled water. It was therefore considered permissible to measure the porphobilinogen content of this very diluted urine by the calibration curve of the standard aqueous porphobilinogen solutions. The porphobilinogen contents of patients' plasma were likewise calculated from the calibration curve of the standard plasma-porphobilinogen solutions.

The specimens of urine and plasma were examined for their porphobilinogen content within half an hour of collection; before the determination they were stored at 2°C.

Urea was determined in blood by the method of Van Slyke and Cullen (Hawk et al. 1947). Urinary urea was determined by the hypobromite method (Harrison 1947).

Creatinine.—The methods described by Hawk et al. (1947) were used for plasma and urinary creatinine.

Inulin clearance.—The method used for this was essentially that described by Higashi and Peters (1950).

Results

The results of these experiments are summarised in the table. The mean plasma-porphobilinogen concentrations in cases 1, 2, 3, and 4(*a*) were 1·0 ± 0, 1·0 ± 0·1, 0·6 ± 0·1, and 1·3 ± 0·2 μg. per ml. respectively.

The mean endogenous porphobilinogen clearances of all the patients when recumbent, corrected in each case to 1·73 sq. m. of body-surface area, was 106 ± 28·4 ml. per min.

Discussion

The results suggest that, in these patients, endogenous porphobilinogen was filtered by the glomeruli and not excreted or reabsorbed by the tubules to any significant extent. Creatinine and inulin are known to be entirely excreted by glomerular filtration. In cases 3 and 4(*a*) the simultaneous renal clearances of creatinine and endogenous porphobilinogen were similar. This similarity was less obvious in case 1. The simultaneous renal clearances of inulin and endogenous porphobilinogen in case 4(*b*) were similar. The mean of the corrected porphobilinogen clearance of all the patients when recumbent (106 ± 28·4 ml. per min.) compared favourably with the figure recorded by Smith (1951) for glomerular filtration-rates obtained in mixed groups of males and females (116 ± 28·1 ml. per min.).

The results of the influence of posture on the renal clearance of creatinine, urea, and porphobilinogen in case 3 require comment. Brun et al. (1945) recorded that glomerular filtration, measured by inulin clearance, and renal plasma flow, measured by diodone clearance, became lower when the reclining posture was changed to the passive erect posture, and then rose to their

former levels when the patient resumed the reclining posture. These changes took place within 15–30 minutes of the change of posture. White and Rolf (1948) and Epstein et al. (1951) confirmed this influence of posture on inulin clearance, and Ni and Rehberg (1931) and White and Rolf (1948) showed a similar effect on the renal clearance of creatinine. On the other hand, Viar et al. (1951) did not find any influence of posture on creatinine clearance.

The renal clearance of endogenous porphobilinogen in case 3 was somewhat higher in the reclining position than in the erect position, and the simultaneous urea and creatinine clearances showed a similar effect. These observations do not clarify fully the rôle, if any, of the renal tubules in the excretion of endogenous porphobilinogen, since the clearance of urea, which is slightly reabsorbed by the tubules, and of diodone, which is excreted by the tubules, are also influenced by changes of posture. However, the close correspondence between the changes in porphobilinogen and creatinine output suggest a closely related mechanism of excretion.

Goldberg and Rimington (1954) suggest that, in experimental porphyria in the rat, porphobilinogen is formed in the liver and not at an extrahepatic site. In acute porphyria in man porphobilinogen is found in the same tissues as in experimental porphyria in the rat —i.e., liver, kidney, and plasma. In addition the mechanism of the renal clearance of porphobilinogen in acute porphyria in man appears to be the same as in the rat. This suggests that the reasoning that porphobilinogen is formed in the liver in experimental porphyria in the rat is valid for acute porphyria in man.

Porphobilinogen is a substance of low molecular weight (226) and is pharmacologically inactive; it can be easily and accurately measured in very small concentrations in urine and plasma. After its injection into rats a maximal recovery of 79% was obtained, of which 75% was found in the urine, while the slight increase of urinary porphyrins reflected a 0·1% conversion of the injected porphobilinogen. Possibly this substance or one closely allied to it might provide a suitable tool for the determination of the glomerular filtration-rate.

The fact that some patients with latent porphyria and acute porphyria in remission may excrete large quantities of porphobilinogen in the urine while they have a determinable plasma-porphobilinogen level should be remembered when an attempt is being made to assess the progress of a case of acute porphyria. It is also clear that clinical interpretations of changes in urinary output of porphobilinogen must take into account changes in renal function as well as changes in the production of porphobilinogen. For example, a decreased output of porphobilinogen can mean either that the patient is getting over his acute attack of porphyria or that his condition is worsening because of renal failure, with, of course, a lowered glomerular filtration-rate. Plasma-porphobilinogen levels and clearance determinations can be used to distinguish between these two possibilities.

Summary

Renal clearance has been studied in three cases of acute porphyria and in one case of latent porphyria.

The results suggest that endogenous porphobilinogen is excreted in man by glomerular filtration without appreciable tubular reabsorption.

The significance of this finding is discussed.

Dr. C. E. Dent made valuable suggestions throughout these studies. I acknowledge the help and encouragement given by Prof. C. Rimington, F.R.S., and Prof. M. L. Rosenheim. Mr. S. Krol gave skilled technical assistance. Dr. E. J. Ross carried out the inulin-clearance. I wish to thank the staff of the department of Clinical Pathology of University College Hospital for the urea and creatinine determinations.

References at foot of next column

PENTOLINIUM TARTRATE IN CONTROLLED HYPOTENSION

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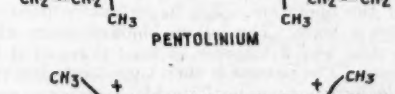
PENTAMETHONIUM (C5) and hexamethonium (C6) were the first drugs used for controlled hypotension in anæsthesia (Organe 1950, Enderby 1950, Shackleton 1951). Enderby and Pelmore (1951) claimed that hexamethonium was the most potent agent for this technique but pointed out the difficulty of maintaining controlled hypotension in many young healthy adults in whom it caused a raised pulse-rate of 120–140 followed by an early return of blood-pressure. Further doses of hexamethonium were often ineffective, and the initial hypotension could not be maintained. These actions limited the usefulness of hexamethonium.

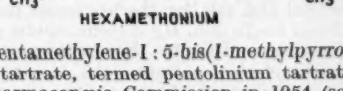
Mason and Pelmore (1953) reported the combined use of procaine amide and hexamethonium bromide in patients with a pulse-rate higher than 110. By this means the pulse-rate was reduced and the hypotension increased.

Randall et al. (1949) described a new ganglion-blocking agent, *d*-3, 4-(1′, 3′-dibenzyl-2′-ketoimidazolido)-1, 2-trimethylene thiophanium *d*-camphor sulphonate, known as 'Arfonad.' Magill et al. (1953) reported the use of this short-acting ganglion paralysant in 5 patients and emphasised the ease of blood-pressure control; for tolerance was more slowly acquired, and further falls of pressure could be achieved after the initial effect had worn off. The short duration of action may cause rapid fluctuations in blood-pressure, and there may be difficulty in maintaining a steady controlled pressure, and therefore hæmostasis may be unreliable. This agent should be administered by intravenous drip to achieve a steady action.

A new autonomic ganglion-blocking drug, pentolinium tartrate, has been tried for its ability to achieve a steady controlled blood-pressure during surgical operations. The preparation used was 'Ansolysen' (M. & B. 2050A),



PENTOLINIUM



HEXAMETHONIUM

which is pentamethylene-1 : 5-*bis*(*1-methylpyrrolidinium*) hydrogen tartrate, termed pentolinium tartrate by the *British Pharmacopœia Commission in 1954 (see figure)*. It is stable in aqueous solution and can be autoclaved *without loss of activity*. The 0·5% aqueous solution

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was used. Pentolinium tartrate contains 44·5% active pentolinium cation, which compares with 56% for hexamethonium bromide. Wien and Mason (1953a and b) studied its pharmacology and reported its activity to be about five times that of hexamethonium bromide, together with a longer duration of action. The site of action was shown to be the autonomic ganglia as with hexamethonium bromide. There was no anticholinesterase, neuromuscular-paralysant, or histamine-liberating property in doses which were fully effective in blocking ganglia.

Smirk (1952, 1953a and b, 1954) and Rønnov-Jessen (1954) report the successful use of pentolinium tartrate in hypertension and emphasise its superiority over hexamethonium, especially its longer duration of action. In view of its powerful and prolonged effect it was decided to use it in anæsthesia for controlled hypotension in an attempt to avoid some of the difficulties and limitations of hexamethonium. It has been possible to obtain with pentolinium tartrate certain effects which cannot be obtained with hexamethonium, and pentolinium tartrate appears to possess distinct advantages over hexamethonium. It has been used in about 180 patients during the last nine months and is now used regularly whenever controlled hypotension is required. Patients' ages have ranged from 5 years to 78, and the operations included various surgical procedures, many of them plastic. In the youngest patient a steady blood-pressure of 65–75 mm. Hg was achieved for 20 minutes. Pentolinium tartrate has made possible a successful control of blood-pressure in the vast majority of patients, and no undesirable side-effects have been observed.

Technique

The same anæsthetic technique is used as for controlled hypotension with hexamethonium. The induction and maintenance of anæsthesia follow the same lines as described previously (Enderby and Pelmore 1951). The patient is transferred to the operating-table and prepared for surgery before the pentolinium tartrate is administered. This is injected while the patient is horizontal, and the fall of blood-pressure in this position is noted before the patient is tilted. In this way the full hypotensive effect of the pentolinium can be assessed and the effects of posture added only as required. Thus 15–20 mg. of pentolinium tartrate is given intravenously to a normotensive patient about 3–5 minutes before the start of the operation. For hypertensive patients half this dose is used. The fall in blood-pressure with this drug is slow, and 3 minutes at least is required for full assessment. The patient is then tipped into the reversed Trendelenburg position until the blood-pressure, measured at heart level on the arm, has fallen to a figure considered both practical and safe for the particular patient. This is often about 60–70 mm. Hg systolic. Older patients are often more susceptible to the hypotensive effect of pentolinium tartrate; therefore the dose is reduced by 5–10 mg. for all ages over 50, even when the preoperative blood-pressure is normal.

Advantages

Pentolinium tartrate shows the following advantages over other agents:

(1) The initial fall of blood-pressure is relatively slow. There is no such sudden drop as is often experienced with hexamethonium and arfonad, even if the latter are administered to the horizontal patient. It is rare to experience undue hypotension in the horizontal position after pentolinium, unless it is administered in large doses to a hypertensive patient.

(2) The hypotensive effects of posture and of controlled or assisted respirations appear greater with pentolinium than other ganglion-blocking agents, thus allowing an easier control of blood-pressure.

(3) In the hypertensive patient the slow initial fall of pressure with pentolinium tartrate is a great advantage. An adequate hypotension can be slowly induced in those patients in whom any very sudden fall is undesirable. Thus a gradual fall of pressure from 250 to 60 mm. Hg in 10–15 minutes can be achieved without producing ill effects on the patient. On the other hand, the effects of hexamethonium and arfonad are most dramatic in these patients, and the fall they induce often occurs too quickly and is too severe.

(4) The fall of pressure, although slower, continues longer, and the final level is often lower than with other drugs. Therefore it is wiser to observe the full effects in the horizontal position before adding the effects of posture. The return of pressure likewise is slow. Although there is a great variation from patient to patient, it is often possible with pentolinium tartrate to run a steady controlled hypotension for 30–45 minutes. This has been achieved in patients where hexamethonium had been used for an earlier operation and a steady control of this nature had proved unobtainable except for a short initial period only.

(5) When the initial dose of pentolinium tartrate is small, as for a hypertensive or elderly patient, further doses usually increase the hypotension. On the other hand, a large initial dose in a young normotensive patient is quickly followed by tolerance, and further doses prove ineffective, as with hexamethonium. In such cases, however, arfonad or a mixture of procaine amide and hexamethonium bromide can be added with good effect.

(6) Intravenous injection only rarely causes tachycardia. With hexamethonium the incidence of tachycardia is much higher, and consequently the control of blood-pressure is more difficult. Although tachycardia is sometimes observed after pentolinium tartrate, it is infrequent even in young healthy adults. When it occurs it is often transient, and the pulse-rate falls as the full effects of pentolinium tartrate become apparent.

(7) Decamethonium has been used throughout this series as a muscle relaxant, and it has been observed that its effects are not reversed by pentolinium tartrate as they are by pentamethonium and hexamethonium. To those who prefer decamethonium as a relaxant this is a distinct advantage when controlled hypotension is used.

Disadvantages

An attempt has been made to incorporate chlorpromazine ('Largactil') in the anæsthetic technique because of its valuable preoperative and postoperative effects. When it was given as premedication, there was a change in the action of pentolinium tartrate. Tachycardia was observed in all the cases (7) where chlorpromazine was used, and the fall of blood-pressure was limited, making effective hypotension very difficult and at times almost impossible. For this reason chlorpromazine has not been used further as premedication. Tachycardia was also observed when arfonad was used after chlorpromazine, but the fall of blood-pressure in these patients was reported to be satisfactory (C. J. Kilduff, personal communication).

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THE CAPSULE OF THE PROSTATE

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Caine's (1953) researches into the end-results of prostatectomy show: (1) that undesirable sequelæ are far commoner than is generally supposed; and (2) that many of these sequelæ are directly related to the state of the prostatic bed. In the more satisfactory cases he found that after prostatectomy this cavity was restored to a spindle-shaped channel, not unlike the normal posterior urethra; in the worst it was ragged, irregular, and sloughy, and sometimes showed diverticula. These appearances were by no means confined to cases recently operated on; they were also seen in patients operated on five years previously. Caine ascribes those changes wholly to the persistence of infection. But persistent infection in the urinary tract is usually related to structural deformity; and possibly the condition of the prostatic capsule after enucleation of the prostate is at least partly responsible for the sequelæ.

"He who first gave names gave them according to his conception of the things which they signified, and if his conception was erroneus . . . shall we not be deceived by him?" Freyer when he described prostatectomy imagined that he was removing the prostate. Probably in the earlier Freyer's operations, and especially the second-stage ones, there was a good deal of pulling and tearing, so the description may not have been far from the truth. Nowadays everyone knows that the enlargement is due, not to any increase in size of the prostate itself, but to a localised hyperplasia around that part of the posterior urethra which lies proximal to the entrance of the ejaculatory ducts; the true prostatic tissue is pushed aside and compressed, forming a capsule for the new formation. For no very clear reason this capsule is termed false; in fact, being a condensation of the surrounding tissue it has as good a claim to authenticity as the capsule of a tumour anywhere else in the body.

Whatever the nomenclature the surgeon is well aware that his object is to remove, not the prostate, but the new formation. He should take special care to interfere as little as possible with the prostate, or with the seminal vesicles and ducts, which are embedded in it.

Technique of Enucleation

The enucleation, being conducted under cover, is a matter that rests with the operator's conscience. Nevertheless it has been brought into the light of day from time to time, notably by Thomson-Walker (1930) and Harris (1933). Thomson-Walker, like Freyer, started from above, but he spent much more time and gave much more attention to the details of the enucleation than Freyer did. Among other things, he emphasised the importance of the "band of tissue containing the ejaculatory ducts."

Retrograde Enucleation

Harris seems to have been concerned mainly with the risk of damaging the compressor urethra, on which depends postoperative control of micturition. The verumontanum he regarded as a land mark. Thereabouts plain muscle gave way to striped in the wall of the urethra; beyond lay the membranous urethra surrounded by the all-important compressor. He condemned the Freyer operation, and still more the "open instrumental" Freyer operation—by which he presumably meant the method of separating the prostate until it remains attached only by the distal urethra, and then dividing the pedicle with scissors.

Harris began by slipping a finger through the meatus and splitting the mucosa longitudinally, in the direction of its fibres on either side of the verumontanum, and then carefully freed the apices of the lateral lobes a little further on. He completed the separation retrograde fashion, and claimed that by doing so he left much of the mucosa of the prostatic urethra undisturbed, especially in the pure lateral-lobe enlargements.

Retrograde separation, though still recommended by some prostatectomists, unfortunately does not always progress smoothly. It is not unusual for the surgeon to find himself in difficulties towards the end of the operation. As he approaches the trigone he is heard to mutter something about fibrosis; and when he hinges the gland forwards before removing it he calls aloud for scissors. With these he may slice away part of the seminal vesicles or open the ampullary expansion of the vas. The patient's chances of retaining any libido after the operation have diminished as much as his chances of developing a vesiculitis, and consequential epididymitis, have increased. Moreover he has lost the rich epithelial lining of the capsule which might have regenerated to form a new posterior urethra.

The retropubic approach, which has enabled the surgeon to see the results of his handiwork for the first time in the history of prostatectomy, demonstrates another risk of retrograde separation. Not uncommonly when the gland is removed it becomes obvious that the posterior capsule has been damaged; sometimes, indeed, it has been torn right through, and the fascia of Denonvilliers is revealed to the eye; it may even be wrenched completely away from the bladder neck, so exposing the dangerous subtrigonal area to infection, and preparing the way for pelvic cellulitis. Postoperative urethroscopy rarely fails to reveal recesses and irregularities in this neighbourhood, and it seems likely that the diverticulum which Caine discovered originated in one of them.

Worse may happen. One surgeon has recorded his surprise at finding that, instead of enucleating the adenoma as he intended, he was enucleating the entire prostate, which had become detached from the triangular ligament. Another blames his house-surgeon for a similar though less startling aberration. In urological circles it is the endoscopist who goes in fear of resecting too deeply and breaching the capsule, but it seems possible that the prostatectomist offends in this way far more frequently, often without knowing it.

Safeguards

The distribution of a prostatic enlargement should be determined by rectal and cystoscopic examination before enucleation is attempted, or, failing cystoscopy, when the bladder is opened.

In the transvesical operation separation starts, as Harris (1933) prescribed, in the cleft by the side of the verumontanum, where the longitudinal fibres of the urethra are easily split. The apices of the lateral lobes lie a little further on, and freeing them is much more troublesome, because the finger-tip is now working across instead of along the fibres of the urethra, but persistent pressure is all that is required to break through; there should be no tugging, for this might avulse part of the membranous urethra and lead to postoperative incontinence. The urethral floor is also studiously avoided at this level; and if the enlargement is confined to the lateral lobes it is avoided altogether for these lobes can be shelled out on either side without disturbing it. With this strip of the urethra preserved the prostatic cavity maintains its contours, and the ejaculatory ducts and seminal vesicles are completely protected. At the same time healing is promoted and stricture avoided, for the strip is more effective in preventing postoperative contracture than any trigonal suture or wedge excision of the bladder neck. Also there is a reasonable chance that the sphincter vesicæ will resume its function and ejaculation be restored.

With the involvement of the middle lobe or posterior commissure that is so common in cases coming to operation, the prospects of maintaining or restoring the status quo ante are much slighter, because the urethral floor between the internal meatus and the verumontanum must be sacrificed in order to remove the obstructing tissue. *Hinc illæ lacrimæ.* The ejaculatory ducts, the seminal vesicles, and the subtrigonal area immediately come within range.

Experience suggests that these structures are more likely to survive if, after the lateral lobes have been freed from below, the middle lobe is freed from above, instead of continuing retrogradely as at present.

The ejaculatory ducts join the urethra at much the same angle as that of a branch joining the trunk of a tree. Anyone who laid an axe to the branch of a tree from below hoping to split it off cleanly would be disappointed; from above, on the other hand, his axe could hardly go astray. The surgeon who, after freeing the apices of the lateral lobes, continues upwards along their posterior surfaces may find his way behind the seminal vesicles as often as in front. If instead he leaves the apices and makes a fresh start at the internal meatus he will have no difficulty in discovering the correct plane.

The consistency of an adenoma varies according to the proportion of fibrous and glandular tissue which it contains; but, hard or soft, it is always harder than its surroundings, so the advancing finger-tip should be inclined towards it and not towards its capsule. There is no trouble in developing the cleavage downwards at the sides until it reaches the level at which the separation of the apices ceased. If there is difficulty it may be because the correct plane has been lost. The obvious remedy is to stop and start afresh somewhere else. Behind, some resistance is always encountered from the ejaculatory ducts—slender enough in themselves but incorporated in a fibromuscular tract that is strong enough to deflect the finger forwards into the urethra, the floor of which is ruptured proximal to the verumontanum.

The enucleation is now completed by freeing the adenoma from the anterior commissure. This step is left until last for a particular reason. The prostate gland, deprived of the support of the levatores ani when these are relaxed by anæsthesia, becomes remarkably mobile. It can be pushed forwards almost as far as the anterior abdominal wall by a finger in the rectum—a fact of which Freyer took full advantage when he planned his operation. But it is still anchored to the pubis by the puboprostatic ligaments, and cannot be pushed backwards to nearly the same extent. Enucleation of an adenoma does not interfere in any way with these ligaments; but their stabilising influence is lost when its anterior attachments are released, and it immediately falls backwards, sometimes out of reach. If it is already isolated, well and good. If not, there may be difficulty in completing the separation without introducing a finger into the rectum; apart from other considerations this is undesirable because it increases the chances of damaging the capsule posteriorly.

A hyperplastic prostate is composed of an aggregation of nodules. Very occasionally these break up in situ and come away like a handful of marbles, but as a rule the adenoma is delivered in one, two, or three pieces, according to its lobular pattern.

A large adenoma separates with surprising facility, especially when it has already partly extruded itself into the bladder. Subvesical enlargements bulge either back into the rectum or up under the trigone. Both separate readily; but with the first there is danger of damaging the capsule stretched out over its posterior aspect, and with the second enucleation threatens to open the retrotrigonal space and always leaves a considerable shelf; such a shelf must be dealt with if post-prostatectomy obstruction is to be forestalled.

It may not always be easy to detach a small adenoma from a fibrous gland, and dissection may be required. The surgeon, if he has not already made a cystoscopic diagnosis, will realise that there is trouble ahead immediately he puts his hand inside the bladder and finds that he has to force his finger-tip into the urethra through a meatus that refuses to admit it. Quite shortly he may be asking himself why he chose open operation rather than endoscopic resection; for the results of interfering with a fibrous gland are not always satisfactory, and the infection which follows operation may be extremely difficult to deal with. Sometimes difficulty in enucleation may be due to the presence of an unsuspected carcinomatous infiltration; such an area is better avoided, for disturbing it may cause considerable local damage and even distant spread.

Enucleation of an adenoma along the lines described demands care and attention. It must not be hurried, and certainly should not be scamped. There is no better way of overcoming the natural inclination to snatch than by deliberately determining to spend five or even ten minutes over the job: the anæsthetist should check the surgeon with his watch until habit is established. The time thus spent is more than offset later when the time comes for dealing with hæmorrhage, which is greatly reduced by a clean enucleation.

The Prostatic Bed

Search should now be made with the finger for outlying nodules. Such a nodule situated close to the prostatic outlet may prevent the resumption of micturition when the catheter is removed. Even when it is not so situated it may take on renewed growth in later years and give rise to recurrence of the trouble. The adenoma itself, especially when it is large and ripe, is surrounded by layers of hyperplastic tissue laid down in laminæ, and some of these laminæ may have become detached or partly detached during the operation. They are poorly nourished and will slough unless they are removed. When these details have been attended to and hæmostasis secured, the bed should present a smoothly scalloped posterior wall, sloping downwards and forwards to an intact verumontanum. The cavity is surprisingly large compared to the size of the adenoma. This is due to its walls being unsupported; but the disparity diminishes as the perineal muscles recover their tone, which may happen straight away or when the effects of the anæsthetic wear off.

If the enucleation has been carefully done, what bleeding there is can be traced to the posterolateral quadrants of the bladder neck, where the prostatic arteries enter the field. When hæmorrhage is excessive the usual explanation is that the capsule has been torn and its veins laid open. Venous bleeding of this kind is more dangerous than arterial because it has less tendency to cease of its own accord. It must therefore be stopped. Moreover the capsule must be repaired. By extending the cystotomy wound downwards through the bladder neck an excellent view can be obtained of the prostatic bed and any necessary suturing carried out.

Summary

Some undesirable sequelæ of prostatectomy may be avoided by leaving a clean-walled cavity instead of a ragged one.

This end is most likely to be achieved by starting the enucleation from below upwards at the apices, continuing from above downwards behind the middle lobe, and finishing in front along the anterior commissure.

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THE USE OF CORTICOTROPHIN GEL AS A TEST OF ADRENAL CORTICAL FUNCTION

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THE use of corticotrophin in the diagnosis of Addison's disease was originally suggested by Thorn et al. (1948) who described a test involving a single intramuscular injection of corticotrophin (A.C.T.H.)—the 4-hour corticotrophin test. This was followed by a modification in which 6-hourly intramuscular injections were given—the 48-hour intramuscular corticotrophin test (Roche et al. 1950)—and later by a test involving two 8-hour infusions on consecutive days—the 48-hour intravenous corticotrophin test (Renold et al. 1952).

de Mowbray and Bishop (1953) reported their experiences with the 4-hour test and concluded that it was of doubtful value. Repeated intramuscular injections act as a more powerful stimulus of the adrenal cortex, but 48 hours may not be long enough to produce a detectable response. Smart (1954) has described a modification of the 48-hour intramuscular test to overcome this difficulty.

The intravenous administration of corticotrophin as a diagnostic procedure is not entirely free from risk. Corticotrophin is a foreign protein and may produce an allergic reaction when given intravenously: if the adrenal cortex responds to stimulation, the allergic reaction will be suppressed by the high level of circulating steroid hormones; but serious complications may arise if the adrenal has been destroyed or is slow to respond. Thorn et al. (1953) have pointed out the high incidence of reactions in patients with either Addison's disease or panhypopituitarism and have suggested that only specially purified corticotrophin should be used for intravenous infusions in such patients. Severe reactions to intravenous corticotrophin in two patients with panhypopituitarism have been reported in this country (Wilson 1951), and it seems clear that intravenous corticotrophin tests for Addison's disease should not be performed with the ordinary corticotrophin at present available.

Corticotrophin gel, a long-acting preparation for intramuscular injection, has recently been introduced as a powerful stimulus to the adrenal cortex, and Thorn et al. (1953) have proposed its use for diagnostic purposes. Prunty (1954) has described a 48-hour corticotrophin gel test in which a 50% increase in the 24-hour excretion of 17-ketosteroids is accepted as evidence of a normal response. However, in patients with a very low level of urinary 17-ketosteroids a change of this magnitude may be within the margin of spontaneous fluctuation.

In this report the response of the adrenal cortex to corticotrophin gel in 48 patients is described and a procedure is suggested for using this preparation as a diagnostic test in patients suspected of suffering from Addison's disease.

Methods

Observations were made on patients who were given corticotrophin gel either for diagnosis or to initiate corticotrophin or steroid therapy for non-endocrine conditions.

At least 2 control days preceded the injections. During the period of study, diagnostic and therapeutic procedures that might involve stress were avoided. All the patients were on an ordinary ward diet; those already taking extra salt continued to do so. 24-hour urine collections were made from 9 A.M. to 9 A.M. Urinary sodium and potassium were estimated with a lithium internal standard flame photometer (Spencer 1950), and 17-ketosteroids by a modification of the method proposed by the Medical Research Council Committee on Clinical Endocrinology (1951) using 7·5-ml. aliquots of urine and giving recoveries of added dehydro-iso-androsterone of 80–90%. Eosinophils were counted by Randolph's (1944) method, the blood for this purpose being collected between 10 and 11 A.M. Injections of corticotrophin gel were given between noon and 1.0 P.M.

Results

The response to corticotrophin gel in a patient with normal adrenal cortical function is shown in fig. 1. The results obtained in thirty-three patients with normal adrenal cortical function showed that the absolute eosinophil-count, the urine sodium/potassium ratio, and the 24-hour 17-ketosteroid excretion gave the most consistent and satisfactory indication of an adrenal response to stimulation. Significant alterations of these indices are defined as:

Absolute eosinophils ..	Initial level >50 per c.mm. Reduced to <10 per c.mm.
Urine Na/K ratio ..	Reduced to <50% of initial level*
Urine 17-ketosteroid excretion	Increase of >4 mg. per 24 hours

In the thirty-three patients with normal adrenal cortical function, injections of 60 or 120 units of corticotrophin gel were given on one or more occasions at daily intervals. Twenty-two tests were made with 120 units and all the patients showed a significant alteration of the absolute eosinophil-count, or the urine Na/K ratio, or both, after the first or second injection. One of the eleven patients given 60 units did not give a positive response with two injections. The speed with which a significant response of the three selected indices was obtained is shown in table I. In four patients the reduction of eosinophils did not satisfy the criteria laid down, although electrolytes and excretion of steroids showed the usual changes. The results in two of these patients are shown in figs. 2 and 3: one (fig. 2) had an allergic eosinophilia which was considerably reduced but not to <10 per c.mm., and in the other (fig. 3) no explanation could be given for this "resistance of the eosinophil." Changes in the urine Na/K ratio were usually apparent on the first day; the two patients in whom there was no significant alteration had severe kidney disease: salt-losing nephritis in one (fig. 4), and myeloma with renal failure in the

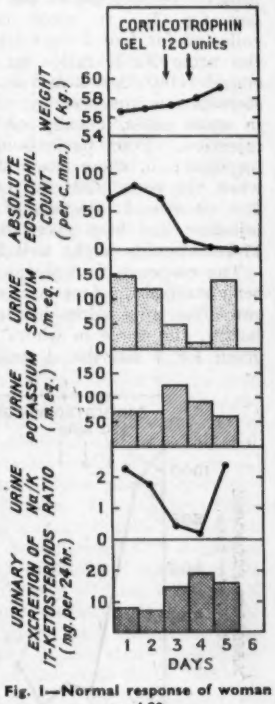

Fig. 1—Normal response of woman aged 29.

* The initial level is obtained from the geometric mean of the figures on the two control days. If r_1 and r_2 are the urinary Na/K ratios on the two days before the administration of corticotrophin, and r_3 is the lowest ratio thereafter, a significant reduction has taken place if $r_3 < {}^1/_2\sqrt{r_1 \times r_2}$. (Since the distribution of r is not symmetrical, the calculations of significance were made on the logarithms of the values; as a result it is necessary to use the geometric mean, which is related to the mean of the log. values.)

TABLE I—SPEED WITH WHICH PATIENTS WITH NORMAL ADRENAL CORTICAL FUNCTION RESPONDED TO DAILY INJECTIONS OF CORTICOTROPHIN GEL 60 OR 120 UNITS

Test	No. of patients who responded to	
	120 units	60 units
Absolute eosinophil-count:		
First day	12	6
Second day	3	2
Third day	2	0
No significant change	2	2
Not applicable (initial count < 50)	3	1
Urine Na/K ratio:		
First day	17	10
Second day	4	0
No significant change	1	1
Excretion of 17-ketosteroids:		
First day	8	4
Second day	11	4
No significant change	3	3
No. of patients studied	22	11

other. It was noted that, although the urine Na/K ratio decreased on the first or second day, it soon increased again despite continued adrenal cortical stimulation and progressive increase of the excretion of 17-ketosteroids (see fig. 3). In some cases in which urine was collected for 1 or 2 days after the corticotrophin period the urine Na/K ratios on these days increased very considerably (figs. 2 and 3). The excretion of 17-ketosteroids was increased by more than 4 mg. per 24 hours in most cases, usually on the day after the second injection. Four patients did not show an adequate response: in these cases the study had been finished when the eosinophils fell to <10 per c.mm. after the first or second injection of corticotrophin. If a third injection had been given, the increase in excretion of 17-ketosteroids might well have exceeded 4 mg. a day.

The response to injections of corticotrophin gel has been studied in four patients with Addison's disease, two after total adrenalectomy, six with panhypopituitarism, and three in whom cortisone therapy had been given for 7 months, 1 year, and 3 years and adrenal cortical atrophy had presumably resulted. The patients with Addison's disease showed no response to corticotrophin gel; two received six daily injections of 120 units and the others three. One of these patients (fig. 5*a*) had only partial adrenal cortical failure and had been without cortisone or other treatment for 6 weeks at the time of the test. The other cases were more severe, and two had had addisonian crises; one was taken off cortisone 4 days before the test, and although he received an extra 200 m.eq. of sodium a day he lost 5 lb. in weight during the next 10 days. The last two patients with Addison's disease were tested while receiving cortisone 37·5 mg. per day; the satisfactory response of the patient on prolonged cortisone therapy (fig. 6) indicated that adrenals showing cortisone-induced secondary atrophy could respond rapidly to diagnostic injections of corticotrophin gel. The patients who had undergone total adrenalectomy were given six daily injections of corticotrophin gel, maintenance therapy with cortisone being continued; no change took place to suggest any adrenal cortical tissue remained (fig. 5*b*).

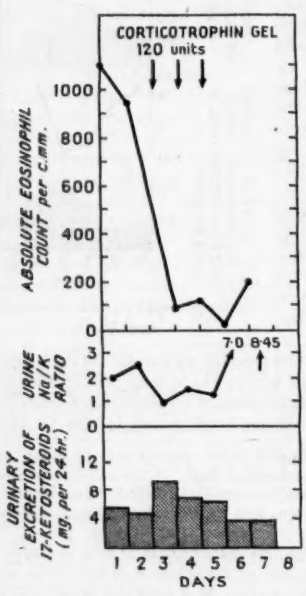

Fig 2—Response of man, aged 54, with allergic eosinophilia.

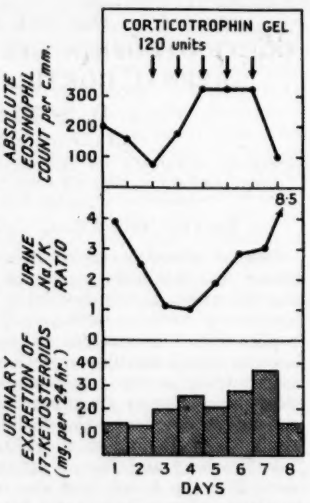

Fig. 3—The "resistant eosinophil" and escape and rebound of Na/K ratio during and after prolonged stimulation of adrenal cortex in man aged 27.

The six patients with panhypopituitarism responded with with different speeds to corticotrophin gel injections (table II and fig. 7).

Patients 1 and 3, in whom the number of eosinophils did not fall below 10 per c.mm., were both men with long-standing panhypopituitarism. In patient 2 the defect resulted from postpartum necrosis and although severe had lasted only 3 years. In the remaining cases the condition was relatively mild but had been present for many years. Five of the six patients showed a significant alteration of the urine Na/K ratio on the first day of administration of corticotrophin gel, whereas in the more severe cases the increased excretion of 17-ketosteroids took 4–6 days to become unequivocal.

Discussion

People with normal adrenal cortical function respond to corticotrophin by increasing the production of adrenal cortical hormones. When corticotrophin is used as a diagnostic test of adrenal cortical reserve, evidence of increased activity of the gland must be sought. It is this aspect of corticotrophin tests that has given rise to the greatest difficulty in practice. It must be possible to estimate the indices of response both quickly and conveniently. If the test is to consist in repeated daily stimulation, it is desirable to know the result of the previous day's stimulus before the next is due, and the test can then be terminated as soon as a positive response is obtained. The most convincing evidence would be an increase of the plasma level or urinary output of one of the adrenal cortical hormones. The only estimation of this type that is a routine laboratory procedure is the urinary excretion of 17-ketosteroids. This must be done

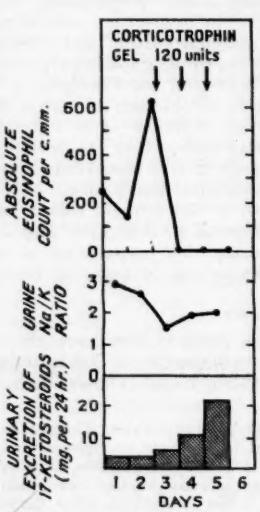

Fig. 4—Response of man, aged 48, with salt-losing nephritis.

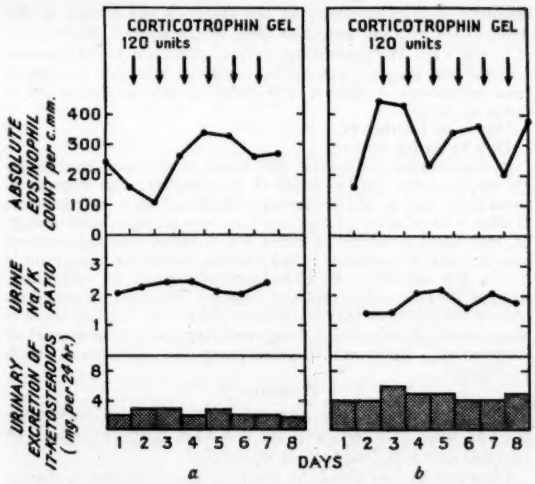

Fig. 5—Responses of: *a*, woman, aged 30, with Addison's disease; *b*, man, aged 48, after total adrenalectomy for malignant hypertension and on oral cortisone 37·5 mg. daily.

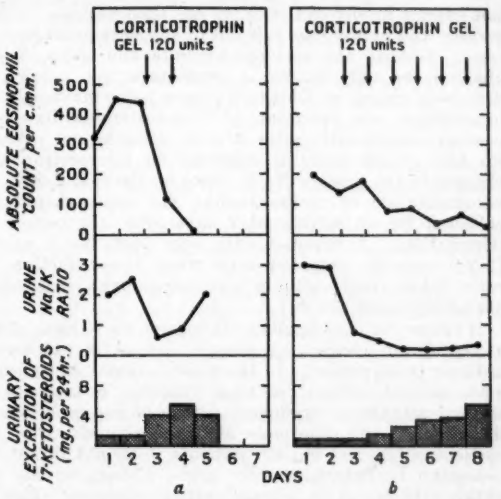

Fig. 7—Responses of: *a*, women, aged 35, with Simmonds's disease (case 2); *b*, man, aged 53, with long-standing panhypopituitarism of unknown origin (case 3).

on a specimen of urine collected during the 24 hours following the start of the stimulation; the estimation is tedious and takes 18–24 hours. Furthermore, when the adrenal cortex is atrophic, adrenal androgen is the last of the three cortical hormones to show a response to corticotrophin; in patients with panhypopituitarism increase of the urinary 17-ketosteroids may be delayed for some days after the start of the injections.

Indirect evidence of adrenal cortical response may be obtained by studying hæmatological or metabolic changes resulting from increased production of hormone. These changes can be determined by rapid and simple methods. In the original 4-hour corticotrophin test Thorn suggested the use of absolute eosinophil-counts and the urine uric-acid/creatinine ratio (Thorn et al. 1948). The latter, however, proved unreliable and was soon discontinued (Thorn et al. 1951). It is well known that, in patients with normal adrenals, injections of corticotrophin produce striking changes in the urinary sodium and potassium levels, but these have seldom been used as an index of adrenal cortical response in a corticotrophin test.

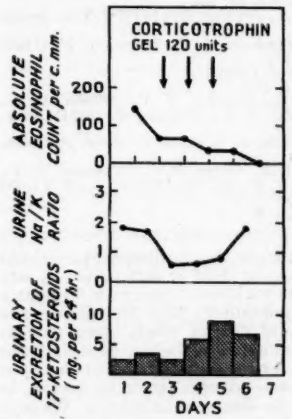
CORTICOTROPHIN GEL 120 units
ABSOLUTE EOSINOPHIL COUNT per c.mm.
URINE Na/K RATIO
URINARY EXCRETION OF 17-KETOSTEROIDS (mg. per 24 hr.)
DAYS

Fig. 6—Response of woman, aged 29, with adrenal suppression by cortisone, who had received 62·5–75·0 mg. of cortisone daily for 3 years before test. Cortisone was continued during test.

Difficulties in the interpretation of absolute eosinophil-counts have been reviewed by de Mowbray and Bishop (1953). The methods used involve a considerable error, because the number of cells actually counted is very small. There are also normal diurnal and day-to-day variations. In this study two control counts were made at the same time on consecutive days; if either was less than 50 per c.mm., the absolute eosinophil-counts were discontinued, and reliance was placed on other evidence for detecting any adrenal response. If no eosinophils were seen in either of two counting-chambers, the result was reported as <10 per c.mm. A reduction of from >50 to <10 per c.mm. has been accepted as evidence of a significant change in the absolute eosinophils outside the range of spontaneous variation combined with errors in counting. Although this is a quick and convenient method of detecting an adrenal cortical response it must not be used as the sole criterion. In some cases the initial count may be too low for the changes to be regarded as significant: in patients with allergic, dermatological, and parasitic conditions the eosinophils may show a reduced response to adrenal cortical hormones, and in a few patients an unexplained resistance of the eosinophils has been noted.

The possibility of using changes in the urine Na/K ratio as evidence of adrenal cortical response has been investigated. It was found that the ratio changed considerably during the first or second 24-hour period after the start of daily injections of corticotrophin gel. This happened even in patients with severe adrenal cortical atrophy associated with either panhypopituitarism or prolonged cortisone therapy. If a suitable flame photometer is available, the concentrations of sodium and potassium in urine can be determined in a matter of minutes by running suitable dilutions of urine through the apparatus. The chief difficulty of using urine Na/K ratios is the wide day-to-day variation that may be found in patients on an ordinary ward diet. Statistical analysis of the figures obtained in this study has shown that a significant reduction of the urine Na/K ratio, as defined in this report ($r_3 < {}^1/_2\sqrt{r_1 \times r_2}$), will occur by chance in 1 in 100 patients with Addison's disease. The likelihood of the opposite occurring—i.e., of a patient with normal adrenal and renal function not showing a significant reduction—is more difficult to assess. It did

TABLE II—SPEED OF RESPONSE TO CORTICOTROPHIN GEL IN PANHYPOPITUITARISM

Case no.	1	2	3	4	5	6
Corticotrophin gel:						
Daily dose (units)	60	120	120	120	120	120
No. of days	10	2	6	1	1	3
Day of significant response:						
Absolute eosinophil-count ..	0	2	0	1	1	2
Urine Na/K ratio	1	1	1	1	1	0
Excretion of 17-ketosteroids ..	4	2	6	2	0	2

not happen in any of the thirty-one such patients in this series; and in any case it is not of any very great importance, because the eosinophil-counts and urine Na/K changes are only screening procedures (see below), a definite diagnosis of Addison's disease being made only if, in addition, the excretion of 17-ketosteroids does not increase significantly after 3 days' stimulation. When for any reason there is difficulty in interpreting the changes in the urinary Na/K ratios on the first 2 days of administration of corticotrophin, the urine should be collected for an additional 2 days after the period of stimulation. A rebound with very high Na/K ratios (>20) may be obtained even when the reduction in ratio, while corticotrophin was being given, was comparatively small (50–60%).

If either the eosinophils or the urine Na/K ratio show a significant change, Addison's disease is extremely unlikely to be present. In the great majority of patients with normal adrenal cortical function or secondary cortical atrophy a significant change of one or other of these indices will take place after the administration of corticotrophin, and in such patients it should rarely be necessary to determine the urine 17-ketosteroids to obtain evidence of an adrenal cortical response. This is important because, of the three indices discussed, estimations of the urine 17-ketosteroids are by far the most time-consuming. On the other hand, absence of any change in the absolute eosinophil-count and urine Na/K ratio after administration of corticotrophin is not sufficient grounds for diagnosing Addison's disease. These indices are only indirect evidence of adrenal cortical activity; if they suggest adrenal insufficiency, further and more direct evidence must be obtained. In the procedure outlined below it is recommended that aliquots of the 24-hour urine should be kept, and, if the eosinopihl-counts and urine Na/K ratios suggest adrenal cortical insufficiency, the daily excretion of 17-ketosteroids should be determined before a definite diagnosis is made.

The optimal dose of corticotrophin to be given each day requires further consideration. Little information is available about the quantity of corticotrophin gel required to produce maximal stimulation of the adrenal cortex. In the earlier tests in this series 60 units of corticotrophin gel was given each day; but in view of the rather slow response in some cases, and of increased excretion of potassium when the dose was increased to 120 units, it was concluded that 60 units did not produce maximal stimulation. Thorn et al. (1953) suggest that 60–80 units should be given on 2 consecutive days. If corticotrophin gel 40 units per ml. is available, an injection of 120 units is not unduly large. Many of these tests had to be performed with a more dilute preparation (20 units per ml.), and two injections of 3 ml. each were given at separate sites. The patients did not complain of any discomfort, and there were no local reactions. At present it is recommended that 120 units of corticotrophin gel should be given daily for up to 3 days. Patients with normal adrenal cortical function and those with secondary atrophy all gave a normal response by the 2nd day; failure to respond to three injections is convincing evidence in favour of the diagnosis of Addison's disease.

Corticotrophin Gel Test of Adrenal Cortical Function

The following procedure is suggested:

For the period of the test the patient should take a normal diet; if he has been receiving extra salt it should be continued.

Day I. 9 A.M.–9 A.M.: 24-hour urine collection.

Day II. 9 A.M.–9 A.M.: 24-hour urine collection. 10 A.M.: absolute eosinophil-count.

Day III. 9 A.M.–9 A.M.: 24-hour urine collection. 10 A.M.: absolute eosinophil-count. Noon: corticotrophin gel 120 units.

Day IV. 9 A.M.–9 A.M.: 24-hour urine collection. 10 A.M.: absolute eosinophil-count (result required by noon). If the absolute eosinophil-count is less than 10 per c.mm. or the urine Na/K ratio is less than 50% of the control figure—i.e., $< {}^1/_2\sqrt{r_1 \times r_2}$—the patient has normal adrenal cortical function and the test may be terminated. If there has been no significant alteration, a further 120 units of corticotrophin gel is given at noon.

Day V as for day IV.

Day VI as for day II.

24-hour urine collections are made in a vessel containing 10 ml. of conc. HCl; when it is complete, the volume is measured, and a 250-ml. aliquot is stored in a refrigerator. If after 3 days' stimulation there has been no significant change of eosinophil-count or of urine Na/K ratio, adrenal cortical insufficiency is probable; but, before a definite diagnosis is made, the excretion of 17-ketosteroids must be estimated. Figures for the control and test days are obtained by examination of the aliquots that have been preserved. Unless there is an increase of more than 4 mg. per day during the period of stimulation, Addison's disease may be diagnosed with confidence.

Summary

The response of the adrenal cortex to corticotrophin gel has been studied, and its use as a diagnostic test of adrenal cortical function is described.

Changes in the absolute eosinophil-count, the sodium/potassium ratio in the urine, and excretion of 17-ketosteroids have been used to detect an adrenal cortical response.

Absence of any significant change in these indices after three injections of 120 units of corticotrophin gel on consecutive days strongly supports a diagnosis of Addison's disease.

Patients with secondary adrenal cortical atrophy respond rapidly to corticotrophin gel in this dosage.

The corticotrophin gel (Armour) used in this study was provided by the Medical Research Council. I am indebted to Prof. M. L. Rosenheim and Dr. E. E. Pochin and Dr. G. I. M. Swyer for allowing me to study patients under their care, and Dr. M. Steel, Dr. F. L. Dyson, and Dr. R. J. Calvert for referring patients. I am very grateful to Mr. N. W. Please and Mr. K. R. Dennis, of the department of statistics, University College, for their analysis of the data relating to the urine Na/K ratios. The absolute eosinophil-counts were performed in the routine hospital hæmatological laboratory, and I wish to thank Prof. M. Maizels and his staff for their coöperation. The electrolyte and steroid estimations were performed in the laboratories of the Medical Unit by Miss Audrey Moxham.

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"... a moment's thought reveals that no disease ever existed without a living man, woman or child to suffer from it, any more than a human mind, as we know it, can exist without a human body and brain to maintain it. No! Diseases are not entities like birds, beasts and flowers which breed true to type and can be neatly classified and labelled, as their Latin names sometimes suggest. Rather, all are reactions between the individual man and some adverse factor or factors in his environment to which he has succumbed . . .We still know far too little about the psychosomatic constitution of the individual man, his predispositions to succumb and the nature of the risks to which we are all exposed in this strange world in which we are born and live our finite lives."—Dr. A. E. CLARK-KENNEDY, *Medicine in its Human Setting*. London, 1954; p. 26.

INFLUENCE OF THE GASTRIC JUICE ON TISSUE METABOLISM

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AFTER earlier work on the metabolism and estimation of iron (Dominici 1928, 1929a and b), Oliva and Pitzurra (1940) elaborated a method for estimating serum-iron, and Oliva and Furbetta (1943) showed that the presence of hydrochloric acid in the gastric juice was not absolutely indispensable for the absorption of iron taken by mouth (confirmed by Dominici and Tramontana 1953). Next, idiopathic hypochromic anæmia was shown to be due not to faulty absorption of alimentary iron but to a disturbance of the internal metabolism of iron (Dominici 1943), and Oliva (1948a and b) suggested that all the syndromes previously attributed to a genuine iron deficiency ("*sideropenic syndromes*" of Heilmeyer, "asiderotic" or "hyposiderotic conditions" of Waldenström, "asiderosis" or "dyssiderosis" of Vannotti and Delachaux, &c.) were due to a single cause, which in his opinion was a disturbance of oxidative metabolism ("dysendoatmia" and "dysendoatmic syndromes").

Thus it became evident to us that iron in the body takes part in complex biological reactions closely connected with the function of the digestive tract. Therefore we investigated the possible action of gastric juice on the internal metabolism of iron, and tried to find out whether normal gastric juice could modify certain pathological conditions known to be connected with the metabolism of iron.

Intramuscular Injections of Gastric Juice

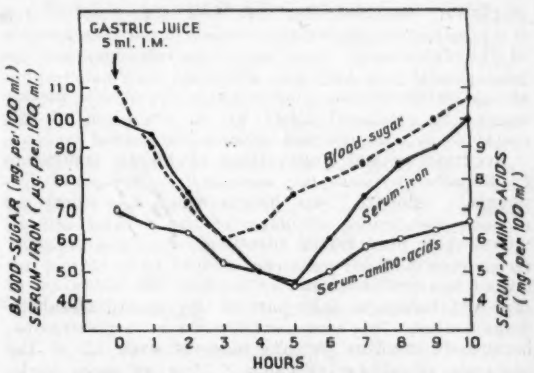
Gastric juice was obtained by intubation from healthy subjects and from patients with various complaints, collected in test-tubes, centrifuged to get rid of any coarse residue, brought to pH 7·5 by the addition of sodium bicarbonate and sodium carbonate, and filtered. The resultant liquid was clear, colourless or almost colourless, opalescent to transmitted light, and of neutral reaction. Intramuscular injection of 5 ml. of gastric juice sometimes caused a slight rise in temperature, which settled in 12–24 hours. Specimens of blood were collected every hour from the subjects of the experiment, and the levels of sugar, iron, and amino-acids in the blood were estimated.

ACTION OF GASTRIC JUICE INJECTED INTRAMUSCULARLY

Group	Source of gastric juice (type of patient)	Type of recipient of injection of gastric juice	Result (+, normal humoral reaction, −, no reaction)
1	Healthy	Healthy	+
2	Healthy	Hypochromic achlorhydric anæmia	+
3	Healthy	Pernicious achlorhydric anæmia	+
4	Healthy	Achlorhydria without anæmia	+
5	Hypochromic hyposideræmic achlorhydric anæmia	Healthy	−
6	Pernicious achlorhydric anæmia	Healthy	+
7	Pernicious achlorhydric anæmia	Hypochromic achlorhydric anæmia	+
8	Achlorhydria without anæmia or other lesion	Healthy	+
9	Pernicious type of anæmia of pregnancy with hyperchromia and hyperideræmia	Healthy	+
	Hyperchromic or normochromic, hyperideræmic, non-achlorhydric, aplastic, or hypoplastic anæmia	Healthy	+
	Granulocytopenia of exogenous or endogenous origin	Healthy	+

Gastric juice obtained from healthy people lowered the blood-sugar, serum-iron, and serum-amino-acids regularly and considerably (see table and figure), the lowest values being found four to six hours after the injection. We term this response to intramuscular injection of normal gastric juice a normal humoral reaction.

This result of injecting gastric juice from a healthy subject was obtained in all the recipients—healthy people, patients with so-called idiopathic hypochromic anæmia, patients with pernicious anæmia with histamine-resistant achlorhydria, and patients with achlorhydria without evidence of anæmia or other dystrophy.



Normal humoral reaction after intramuscular injection of 5 ml. of normal gastric juice.

Identical results were obtained when the gastric juice, instead of being taken from healthy subjects, was taken from patients with pernicious anæmia with histamine-resistant achlorhydria, patients with histamine-resistant achlorhydria without anæmia, patients with hyperchromic hypersideræmic anæmia of pregnancy without achlorhydria, patients with hypoplastic anæmia (normo- and hyper-sideræmic, normo- and hyper-chromic), and patients with granulocytopenic syndromes.

If, on the contrary, the gastric juice was taken from a patient with hypochromic anæmia with achlorhydria it did not have any effect on the recipients; whereas gastric juice taken from patients with pernicious anæmia with histamine-resistant achlorhydria induced a normal humoral reaction.

Therefore, the injection of 5 ml. of gastric juice will constantly alter, in all people, the levels of glucose, iron, and amino-acids in the blood, unless it is obtained from patients with so-called idiopathic hypochromic anæmia with histamine-resistant achlorhydria, in which case it will be inactive. The lack of such activity in the gastric juice of patients with so-called idiopathic hypochromic anæmia is certainly not due to the achlorhydria, because all the other achlorhydric patients have been shown to have an active gastric juice in this respect. This means that, even in serious anatomical and functional disturbances of the stomach, the gastric juice still maintains the property we are discussing, but we do not exclude the possibility that in other pathological conditions this property of the gastric juice may be lost.

The constant uniformity of our findings leads us to conclude that the factor which is present in the gastric *juice and can induce these biochemical changes is a* normal physiological constituent (heating the juice in a water-bath at 60°C for an hour causes this factor to disappear completely), and probably it normally takes some part in body metabolism.

*These studies have shed new light on so-called idio-*pathic hypochromic anæmia and related or similar *conditions.*

"Idiopathic Hypochromic Anæmia" and Other Syndromes

As has already been mentioned, we consider "idiopathic hypochromic anæmia" to depend on an alteration of internal iron metabolism. The observations that the anæmia and iron deficiency are accompanied by profound nutritional disturbance of the tissues (particularly the mucosa of the mouth and the alimentary tract, the skin and its appendages—hair and nails—and the hæmopoietic tissue), that iron enters into the composition of various respiratory enzymes, and that with large doses of iron it is possible to obtain either complete or partial regression of the disturbances have led us to conclude that the fundamental pathology is an alteration of cellular respiration (dysendoatmia). Consequently the clinical picture cannot be explained solely by an alteration of iron metabolism, although this remains the central factor.

Accurate critical examination of known syndromes ("idiopathic hypochromic anæmia," "sideropenic dysphagia," "glossitis" and lesions which may affect the mucous membranes of many of the natural orifices, "dystrophic pluriorificial affections," &c.) and the most recent results of our researches obliged us to correct our former interpretation and to consider the alteration of *iron metabolism as only part of the general metabolic* derangement. This derangement must be very extensive, because it involves perhaps most or even all of the processes of cellular exchange. Thus we seem to be justified in using the terms "dysendoatmia" to indicate the basic disturbance, and "dysendoatmic syndromes" to indicate the diseases resulting from it.

The dysendoatmic syndromes include many different types: slight forms, consisting essentially of moderate glossitis, with or without associated cheilosis, with spasm of the pharynx and œsophagus, and dystrophy of the skin and its appendages (thinning out and falling of the hair, *alteration of the nails, &c.); more serious forms, with* very severe and frankly hypochromic iron-deficiency anæmia, histamine-resistant achlorhydria, and various abdominal lesions; and severe forms, characterised by progression of the above-mentioned disturbances and by the eventual appearance of the *pluriorifical syndrome* affecting oral, vaginal, and anal mucosæ, producing general deterioration and sometimes resulting in death.

These symptoms, apparently so multiform and varied that they are considered by many workers to belong to different clinical entities (idiopathic hypochromic anæmia, sideropenic dysphagia, glossitis, dystrophic pluriorifical affections, &c.), must, in our opinion, be referred to a single disease, and we believe that the pathological cause common to them all is a disturbance of the tissue metabolism, particularly manifest in the more labile tissues but involving the whole organism. These various syndromes, which may present as isolated or complex deficiency states, are linked together by the deficiency of a common factor which is found in normal gastric juice.

Repeated intramuscular injections of normal gastric juice, without any other treatment, have in the cases studied by us (which corresponded precisely to the above-mentioned types) had rapid and sure therapeutic effects, with obvious regression of symptoms, which, however, remained unmodified if the injected gastric juice came from a patient with the same disease.

Thus the factor that we have shown to be present in the gastric juice of healthy people, and that we have seen *to be capable of inducing the above-mentioned variations* in the plasma, can also correct the pathological states which we have grouped and named "dysendoatmia." We are therefore justified in stating that these syndromes are caused by a deficiency of this factor and can be cured *only by making good the deficiency.*

Illustrative Case-report

A dressmaker, aged 51, had been pale and felt easily tired for two years. She was found to have glossitis and histamine-fast achlorhydria. She weighed 48 kg. A blood-count showed red cells 2,320,000 per c.mm., Hb 28%, colour-index 0·6, white cells 4800 per c.mm. (polymorphs 57%, eosinophils 1%, lymphocytes 39%, monocytes 3%); *no immature forms.* Sternal puncture showed hypoplastic marrow. Reticulocytes 2 per 1000, serum-bilirubin 0·7 mg. per 100 ml., serum-iron 45 µg. per 100 ml., blood-urea 28 mg. per 100 ml.

The patient was treated with liver extracts, iron 1·6 g. daily by mouth, and vitamins without any improvement. Treatment was then started with parenteral normal human gastric juice 5 ml. twice daily. After the first injections of gastric juice there was considerable improvement in the patient's general condition, with increased appetite, increased weight, and improved blood picture. After only four or five days' treatment her tongue became normal. On the twentieth day of treatment a blood-count showed red cells 3,600,000 per c.mm., Hb 60%, colour-index 0·83, reticulocytes 8 per 1000, serum-iron 79 µg. per 100 ml., serum-bilirubin 0·6 mg. per 100 ml. Weight 49·8 kg.

The patient was discharged and was not given any iron or other hæmatinics. A month later she was perfectly well, and weighed 52 kg. A blood-count showed red cells 4,200,000 per c.mm., Hb 76%, colour-index 0·9, reticulocytes 4%, serum-bilirubin less than 0·5 mg. per 100 ml., serum-iron 106 µg. per 100 ml.

Conclusion

The researches briefly summarised here, which result from very prolonged and multiple investigations, open the way to numerous studies, and it is highly probable that these first results will be greatly extended in the future. A very large number of problems remain to be clarified: *the nature of the factor present in the gastric* juice and active in metabolism, its physicochemical properties, the exact source of its production, the extent of its activity, its relation to other hormones and enzymes, &c. For example, we have found that the oral complications of antibiotic therapy (and perhaps also those caused by infections) respond to parenteral injection of *normal gastric juice.*

We therefore conclude that there is present in normal gastric juice an active factor operating on tissue metabolism and that the parenteral introduction of this factor can correct certain definite pathological states originating *from the lack of this principle.*

Summary

There is present in normal gastric juice a factor capable of considerably lowering the iron, glucose, and amino-acid levels of the blood when it is administered parenterally.

Normal gastric juice 10 ml. injected intramuscularly daily cured disease states believed to be due to a derangement of the internal metabolism of the tissues, more commonly known as "idiopathic hypochromic anæmia," "sideropenic dysphagia," "glossitis," and "pluriorificial diseases."

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MULTIPLE CRETINISM IN A FAMILY

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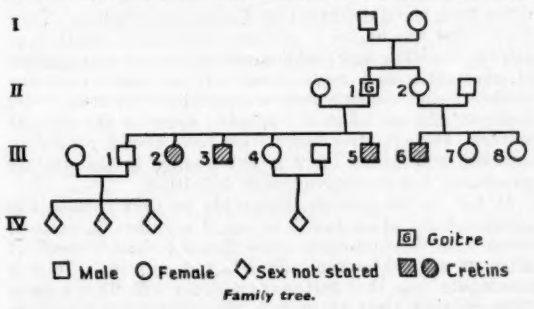
CRETINISM, which was described by Thomas Blizard Curling as long ago as 1850, is comparatively rare. Tredgold (1947) could only find 4 cretins out of nearly 600 consecutive admissions to the Fountain Hospital. Of nearly 1000 aments examined by me in two years 5 were cretins. The occurrence of 1 feeble-minded and 2 imbecile cretin siblings is rarer still, and I have not been able to find any published report of a similar instance.

The father, a farm labourer, born in 1882, and the mother, born in 1883, had lived all their lives in a rural area in Northern Ireland, where their children were born. No consanguinity or history of mental illness is known in the ascendants. Both parents were of normal intelligence and capable of giving a reasonably good account of themselves. The mother had severe hypertension but was otherwise normal. The father's thyroid gland had been moderately enlarged for more than fifty years, and he had had diabetes mellitus for about two years. His sister had given birth to a cretin more than a year after she had left the country.

The birth order of the children (see figure) is as follows: III 1, boy, 1909; III 2, girl, 1910; III 3, boy, 1912; III 4, girl, 1914; III 5, boy, 1919. III 1 is employed as a lorry driver and has three normal children aged 12, 10, and 8 years.



Family tree.

III 2 is 4 ft. 10 in. tall and has many features of cretinism, an intelligence quotient of 56, and a blood-cholesterol level of 380 mg. per 100 ml.; she can write her name and do simple sums and is placid and good-natured; she first had thyroid therapy at the age of 10 years. III 3 is 4 ft. 3 in. tall and obviously a cretin from his appearance, has an intelligence quotient of 36 and a blood-cholesterol level of 500 mg. per 100 ml., has never learnt to read or write, and has never been gainfully employed; he first had thyroid therapy at the age of 5 years. III 4 is normal in appearance and intellect, is married, and has a normal child aged 14. III 5 is 4 ft. 9 in. tall and has most of the physical characteristics of a cretin, an intelligence quotient of 42, and a blood-cholesterol level of 434 mg. per 100 ml. Like his sister and his brother cretins he has never earned his living but is placid and good-tempered; he first received thyroid therapy at the age of 14. In none of these cretins was a goitre present.

The history that the father (II 1) had a long-standing goitre and his sister (II 2) gave birth to a cretin when no longer in the district suggests a specific factor on the father's side, possibly environmental in origin, but capable of being transmitted to a subsequent generation and acting in a manner independent of environment to produce cretinism.

The degree of mental deficiency roughly corresponds to the amount of blood-cholesterol in excess of the normal level.

There is a direct relationship between the amount of mental retardation and the prominence of the physical signs of cretinism, a finding which is by no means constant (Goodkind and Higgins 1941).

Thyroid medication can have had little or no influence, for in III 2, 3, and 5 it was begun after the fifth year of life and discontinued after about a year because of lack of significant response.

In III 2, 3, and 5 physical and mental abnormalities were noticed during the first year of life; this fact distinguishes them from cases of infantile myxœdema, described by Tallerman (1936).

There were no other known cretins in the same district.

I wish to thank Dr. T. W. H. Weir, senior consultant, Special Care Service, Northern Ireland, and Dr. W. G. McKinney, the family practitioner, for permission to publish.

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Preliminary Communication

RUBELLA VIRUS IN TISSUE-CULTURE

No satisfactory means for the experimental study of rubella has yet been described. Hiro and Tasaka [1] transmitted the disease to man by inoculation with filtered material. Habel [2] induced a mild disease in monkeys using virus of human origin. Anderson [3] showed, in volunteers, that the virus could be maintained for long periods at −70° C. Krugman et al.[4] also studied the disease in volunteers. I report here results which appear to indicate that rubella virus can multiply and produce lesions in tissue-cultures of monkey kidney and human embryonic tissues.

TISSUE-CULTURE TECHNIQUES

Tissue-cultures of adult monkey kidney (*Macacus rhesus*) were set up in chicken plasma in soft glass tubes 6 in. × ½ in. in a roller drum at 36°C. Each tube carried *1 ml. of medium, consisting of Hank's or Earle's salt* solution 68%, beef amniotic fluid 28%, chick-embryo extract 4%, and 100 μg. of streptomycin (Glaxo) and 100 I.U. of sodium penicillin per ml. Supernatant fluids were renewed at days 4, 7, 10, 12, and 15 after the *original explanting. At day 7 each tube received 0·05* ml. of appropriate inoculum. The supernatant removed *at day 12, 5 days after inoculation, was used as passage* material. Each passage, therefore, represented a dilution of inoculum of at least 1 : 100. Tubes were fixed and stained on day 18.

Cultures of human embryonic tissues were prepared as *above but not rolled. Fluids were renewed at days 3, 5,* 8, and 11. The tubes were inoculated on day 5 and fixed and stained on day 13.

Titration of virus involved dilution in the complete nutrient medium used for tissue-culture.

Titration of serum was performed on reconstituted serum heated at 56°C for 30 minutes. The serum was then diluted in distilled water and mixed with an equal volume of tissue-culture virus. The mixture was held at 4°C for 30 minutes and inoculated in a volume of 0·05 ml. per tube.

EXPERIMENTAL OBSERVATIONS

Patient Qui was admitted to Fairfield Infectious Diseases Hospital on Aug. 3, 1952. Her major clinical features were a rash, postauricular adenopathy, and mild coryza. Three experienced clinicians were confident of the diagnosis of rubella. Throat washing was taken in normal saline 18 hours after onset of the rash, mixed with beef infusion broth, and stored at −70°C. This was

1. Hiro, Y., Tasaka, S. *Mschr. Kinderheilk.* 1938, **76**, 328.
2. Habel, K. *Publ. Hlth Rep., Wash.* 1942, **57**, 1126.
3. Anderson, S. G. *J. Immunol.* 1949, **62**, 1.
4. Krugman, S., Ward, R., Jacobs, K. G., Lazar, M. *J. Amer med. Ass.* 1953, **151**, 285.

thawed during 1954 and used to initiate the present series of cultures.

Uninoculated tissue-cultures of monkey kidney, as examined in this laboratory, consist of polygonal cells lying contiguously in a sheet. Most of the cells are uniformly small but a few are larger, reaching a maximum diameter about four times that of the small cell. In cultures stained with hæmatoxylin and eosin at 18 days there are occasional multinucleate areas, generally near the original explant or at the periphery of the outgrowth. The number of such areas with five or more nuclei has never been greater, in any one tube, than an average of 3·5 per patch of outgrowth.

Inoculated cultures of monkey kidney were first noted to be abnormal in the fifth passage of Qui throat washings. Similar abnormal appearances have been seen up to the present ninth passage. 5 days after inoculation of the fifth passage, an increase was observed in the number of multinucleate areas over the number present in control tubes. 11 days after inoculation each tube carried an average of between 15 and 100 multinucleate areas per sheet of outgrowth. The proportion of large mononucleate cells was considerably increased. The cytoplasm of both types of cell frequently appeared abnormal, presenting a structureless "smeared" appearance. Occasionally nuclear membranes were not detectable in the mononucleate cells. However, other nuclear detail did not appear abnormal. Nothing suggesting an intranuclear inclusion was seen, and in all nuclei the nucleoli stained normally. Macroscopically many cultures appeared "moth-eaten," owing to the presence of open non-cellular areas in the outgrowth.

Cultures of human embryonic lung and of pooled human embryonic tissue were inoculated with supernatants from the fifth monkey-kidney passage of Qui. Inoculated tubes developed numerous multinucleate cells but such cells could not be found in control tubes.

The same fifth-passage material was examined for the presence of bacteria and known viruses. This included inoculation of chorioallantoic membranes of 10-day eggs, and of adult and baby mice, and of monkeys intracerebrally. No evidence was obtained of the presence of any other infective agent.

There was a clear difference between the inoculated and the control cultures of monkey-kidney cells, but no criterion could be devised for the specificity or otherwise of any one multinucleate area. Therefore, the working rule was adopted that if in any tube the number of multinucleate areas exceeded an average of five per outgrowth this tube had been infected by the virus.

Experiments were performed to titrate the virus and to determine whether the virus would be specifically neutralised by serum from a patient convalescent from experimentally induced rubella. Two serum samples were obtained from the patient A. G., who was included in experiment IV reported by Anderson.[3] The patient was bled on May 7, 1948, and was inoculated, together with a group of other volunteers, on May 11. She developed the expected attack of rubella on May 28, 1948. Her second serum was obtained on June 23, 1948. The virus used in the present neutralisation test was undiluted supernatant fluid from the fifth tissue-culture passage of Qui.

The results, shown in the accompanying table, indicate that the transmissible agent in the cultures was inactivated by convalescent serum from A. G., but not by pre-infection serum from the same person.

In a single experiment it was found that the virus was not inactivated by undiluted convalescent serum from a patient, P. A. P., who had recently suffered a typical attack of measles (morbilli).

TITRATION OF VIRUS AND ANTIBODY IN TISSUE-CULTURES OF SIMIAN KIDNEY

Inoculum (volume 0·05 ml.)	Results 11 days after inoculation	
	Culture tubes positive	Culture tubes examined
Control not inoculated	0	9
Virus,* undiluted	6	6
Virus 1 : 10	6	6
Virus 1 : 100	2	7
Virus,* plus serum A. G. (7.v.48) 1 : 2 †	4	4
Virus,* plus serum A. G. (23.vi.48) 1 : 2	1	5
Virus,* plus serum A. G. (23.vi.48) 1 : 8	0	5
Virus,* plus serum A. G. (23.vi.48) 1 : 32	1	6

* Virus suspension consisted of undiluted supernatant fluid from fifth passage Qui.
† Dilution before addition of virus.

DISCUSSION

Two points call for discussion: the resemblance of the lesions to those observed in cultures of measles (morbilli) virus in similar tissues by Enders and Peebles [5]; and the presence of small numbers of multinucleate areas in control cultures.

All the evidence suggests that both the patient from whom the initial virus material was obtained and the volunteer who provided the two samples of serum suffered from typical rubella. Although the clinical diagnosis of a single case can never be absolutely certain, neither patient showed anything to suggest that the diagnosis should have been measles (morbilli). In the patient A. G. the epidemiological evidence strongly supported the clinical diagnosis. Further, the tissue-culture lesions differ from those described by Enders and Peebles. They found that the nuclei in multinucleate areas 14–21 days after inoculation, and perhaps earlier, showed margination of chromatin and replacement of the interior of the nucleus with amorphous eosinophilic material. By contrast, the nuclei in the affected areas of the present cultures 11 days after inoculation have shown no loss of nucleoli, and where there is any change in the nuclear membrane it is a relative loss of definition.

It has so far proved impossible to differentiate the multinucleate areas found in small numbers in control tubes from the numerous areas that are characteristic of what we regard as typically infected cultures. It is a reasonable hope that further experience will allow a clear differentiation, but at present the results are based on quantitative rather than qualitative assessment of the lesions. A limited experience with human embryo cultures has shown a complete absence of multinucleate cells in control cultures with numerous such forms in infected cultures. This tissue may well prove the most suitable for future work.

In any investigation of this sort there must always be an initial period during which the possibility of unrecognised technical or logical fallacy cannot be confidently excluded. Subject to this inevitable qualification, we believe that these experiments establish a case for the growth of rubella virus in tissue-culture.

SUMMARY

Attempts have been made to propagate the virus of rubella in tissue-cultures of adult monkey kidney and human embryonic tissues.

Inoculated tubes of monkey tissue developed an excessive number of multinucleate areas and large mononucleate cells. These changes were prevented by human rubella antibody.

I am most grateful to Mr. G. Ada, who has prepared salt solutions, and to Dr. Alan Ferris, who has supplied human embryonic tissues. The work was aided by a grant from the National Health and Medical Research Council.

Melbourne University Department of Experimental Medicine, at the Walter and Eliza Hall Institute of Medical Research, Melbourne

S. G. ANDERSON
M.D. Melb., M.R.A.C.P.

5. Enders, J. F., Peebles, T. C. *Proc. Soc. exp. Biol., N.Y.* 1954, **86**, 277.

Reviews of Books

À la recherche d'une éthique médicale

LOUIS PORTES, ancien président du Conseil National de l'Ordre des Médecins. Paris: Masson et Presses Universitaires de France. 1954. Pp. 212. Fr. 800.

THE many ethical and legal questions which arise in medicine have for some years been in the forefront of discussion among lawyers and doctors in France, as elsewhere. On the doctor's side, Dr. Louis Portes, as president of the Conseil National de l'Ordre des Médecins and one of those who framed the 1947 code of medical deontology, gave careful consideration to these important subjects. Unfortunately he did not live to write the work on medical ethics for which he was outstandingly fitted, and this book is a reprint of some of his articles and addresses.

Medical deontology is a wide but by no means a vague subject. Some of its issues—such as artificial insemination, the sterilisation of mental defectives, and narco-analysis—have lately attracted a great deal of attention; others have been less prominent though not necessarily less important. Dr. Portes discussed at some length the "ethics of obstetrics," which are, inter alia, concerned with deciding whether measures to protect the unborn child should be allowed to endanger the life of the mother. He questioned how far therapeutic and medical abortion can be justified: medical indications, he thought, were always relative rather than certain, and the realm of justified therapeutic abortion was becoming narrower every day. Certainly in this, as elsewhere in medicine, each doctor must take personal responsibility for his own decisions; but changing social concepts and the advances of medicine are continually presenting him with new duties and new problems. Inevitably there are times when the private conscience of the doctor conflicts with the public policy of the community. Nor can the needs of individual patients invariably be reconciled with the wish of authority to deal, prophylactically or therapeutically, with whole groups in a certain way.

These anxieties are not limited to one age or one country, but they are nevertheless of immediate practical significance. We have as yet no answer to some problems—such as that of medical secrecy and all it implies—but it is idle to pretend that they do not exist. All who are convinced that these issues must be faced will value these collected thoughts of someone who did much profitable thinking on this subject.

Heart Disease

GEOFFREY BOURNE, M.D., F.R.C.P. Pp. 110. 8*s*. 6*d*.

Rheumatism

W. S. C. COPEMAN, O.B.E., M.D., F.R.C.P.; R. M. MASON, D.M., M.R.C.P. Pp. 152. 8*s*. 6*d*.

Varicose Veins

R. ROWDEN FOOTE, M.R.C.S., D.OBST. Pp. 110. 8*s*. 6*d*.

Epilepsy

LETITIA FAIRFIELD, C.B.E., M.D., D.P.H. Pp. 159. 8*s*. 6*d*. London: Duckworth. 1954.

THESE four volumes, the first issued in Duckworth's Modern Treatment Series, are edited by Lord Horder, and are intended for the general public.

"It is natural and reasonable," Lord Horder says, "for a patient to be interested in the disease from which he suffers. Under modern conditions this natural curiosity is too often satisfied in a catchpenny manner, incomplete and misleading where it is not actively harmful; so that doctors often find themselves having to waste precious time in disabusing patients of false beliefs about their ailments."

These small books, written by authorities on the various subjects, are intended to give people precise and sensible background information about their disorders—"to take the patient into the doctor's confidence," as Lord Horder puts it, so that both can work together. This idea is thoroughly sound. Provided the writers do not provoke unnecessary anxiety, the series should do a useful and much-needed job. All the four pioneer volumes are well written and reassuring. "Rheumatism" does much to clear up for the layman some of the connotations of this overworked word. It explains well what we nowadays know about rheumatic fever, osteo-arthritis, rheumatoid arthritis, slipped disc, gout, and other disorders classed under this family title, and gives a soberly encouraging account of modern research and methods of treatment. "Heart Disease" is reassuring from the outset, combating even in the introduction the dread this diagnosis so often unnecessarily inspires. "Epilepsy" encourages the affected person to take stock of his assets, and to avoid the idea that he is irrevocably handicapped; and tells him much about his disorder and its modern treatment. It also deals well with the management of epilepsy at home, at school, and in employment. "Varicose Veins" suggests that patients should seek adequate treatment for a condition too often endured as inevitable, and we hope they will not be deterred by several alarming illustrations which might perhaps have been omitted. Methods and instruments now discarded are of interest to the doctor; but patients hardly profit as much as we do from contemplating our past mistakes.

Shock and Circulatory Homeostasis

Transactions of the Third Conference, September, 1953. Editor: HAROLD D. GREEN, M.D., professor of physiology and pharmacology, Bowman Gray School of Medicine, Winston-Salem. New York: Josiah Macy, Jr., Foundation. 1954. Pp. 230. $3.50.

A Josiah Macy Foundation conference in September, 1953, discussed wound shock in Korea, reflex factors in regulation of the circulation, and the functional properties of blood-vessels. The published account has succeeded in its chief aim of conveying the informal quality of the conference; and the several interests and personalities of the 25 experts present are recognisable. Experienced workers in the fields covered by the conference will therefore be able to appreciate the frank and stimulating exchange of ideas which took place, and will be helped by the well-reproduced figures and bibliography. On the other hand, a disorderly presentation often hinders the train of the arguments, and the ground work of the subject is not adequately covered. The discussion on shock does not seem to have discovered new approaches to the subject; and it is clear from the interesting account of the reflexes which affect the blood-pressure and from the discussion on the properties of the blood-vessels that there is need for further assessment of the relative physiological importance of the many mechanisms described.

Recent Advances in Dermatology

2nd ed. W. NOEL GOLDSMITH, M.A., M.D. Camb., F.R.C.P., physician in charge of the skin department, University College Hospital, London; FRANCIS F. HELLIER, O.B.E., M.A., M.D. Lond., F.R.C.P., dermatologist to the General Infirmary, Leeds. London: J. & A. Churchill. 1954. Pp. 461. 42*s*.

EIGHTEEN years is a long interval to divide the first and second editions of *Recent Advances*, and Dr. Goldsmith and Dr. Hellier were faced with an exacting task. Progress in the treatment of leprosy, syphilis, lupus, and the pyodermatoses; the introduction of antihistamine drugs, corticosteroids, and euphoriant drugs; the steadily increasing awareness of the significance of emotional factors as they affect the progress and even the genesis of many dermatoses—these are a few of the more important advances they have had to cover.

The book consists of critical surveys on such topics as metabolism, vascular disorders, endocrine glands, vitamins, and allergy as they concern the skin. The grouping of collagenoses is somewhat artificial, but this chapter wisely ends with the suggestion that it is more profitable to distinguish between these disorders than to confuse them. The monochrome illustrations are good and on the whole well chosen. Most of the colour plates are also first-class, but the illustration of orf leaves the reader undecided whether the patient was oriental, jaundiced, mepacrine-intoxicated, or painted with flavine. The references are many and helpful, but only a small proportion are included in the bibliography.

The subject-matter and the general arrangement of the book are good. It makes an excellent addendum to

the standard textbook and should prove a useful interpreter to go between the textbook and the yearbook.

Operative Neurosurgery

ELISHA STEPHENS GURDJIAN, M.D., professor of neurosurgery, Wayne University College of Medicine; JOHN E. WEBSTER, M.D., assistant professor of surgery, Wayne University College of Medicine. Baltimore: Williams & Wilkins. London: Baillière, Tindall, & Cox. 1952. Pp. 442. 76*s*. 6*d*.

THIS book will have attracted those interested in the presentation of surgical technique, for it has a freshness and enthusiasm of approach to a task which demands a good deal of painstaking work. Broadly, its plan is to arrange the operative description, together with the appropriate diagrams and a note on special anatomical features, on facing pages, which makes for ready reference and a quick appreciation of the operation. Space has also been found in the various sections for brief historical sketches.

The artist is Miss P. M. Larivière, and she has chosen black-and-white diagrammatic illustrations. Their originality and bold lines are a welcome change from the more formal illustrations to which we are accustomed, and in many instances they are highly successful in bringing out particular operative points. The method, however, has its limitations and a more realistic approach in the soft-tissue work would perhaps have made for clarity and also emphasised the success of this diagrammatic approach elsewhere. In places, also, the number of illustrations on one page makes it difficult to appreciate the situation without considerable study and searching for the key. Nevertheless there is much that is good in this method and one method can never satisfy all the requirements of medical illustration.

The subsidiary title suggesting an emphasis on traumatic surgery is hardly necessary, for in fact this is a very comprehensive manual of neurosurgery of the head and spine, with sections on the surgery of peripheral nerves and of the sympathetic nervous system. For the most part, the authors have described standard procedures, and the neurosurgeon will find here practically everything he requires, in a text that is clear, reliable, and well written.

Geriatric Medicine

Medical Care of Later Maturity. 3rd ed. Editor: EDWARD J. STIEGLITZ, M.D., F.A.C.P., consulting internist, Suburban Hospital, Bethesda, Maryland. Philadelphia and London: J. B. Lippincott. 1954. Pp. 718. £6.

THE new edition of this massive book follows the plan of the earlier editions; the contributions of the team of experts are cemented by the chapters written by Dr. Stieglitz alone or with collaborators. Most of the subject matter is to be found in the good general textbooks, but it is here fully and usefully turned towards the manifestations and treatment of disease in the elderly.

A new chapter on mental hygiene reviews wisely and sympathetically the problems and stresses which may follow retirement, diminished status in the home, and dwindling vigour and independence. Another new chapter, on geriatric nursing, is written chiefly from the view-point of the public-health service or the private nurse. The nurse will look in vain for practical suggestions in dealing with such a problem as incontinence. The chapter on diseases of joints deals helpfully with reablement, but it is disappointing to find so little on the management of the hemiplegic patient. In contrast the chapters on surgery and on anæsthesia contain many sound and detailed suggestions.

The print is clear and the illustrations arresting, but the glossy paper and the weight of the book make it tiring to read.

Recent Developments in Cell Physiology (New York: Academic Press. London: Butterworth. 1954. Pp. 206. 40*s*.).—No earlier than April of this year the Colston Research Society welcomed botanists, zoologists, biochemists, biophysicists, geneticists, and embryologists to Bristol, to discuss this subject. Mr. J. H. Kitching, PH.D., the editor of the proceedings, is to be congratulated that the fifteen papers presented at this symposium, together with terse informative summaries of the discussions, should have already appeared in such pleasantly readable form.

Chemical Pathways of Metabolism.—Dr. D. M. Greenberg, the editor of this book, reviewed here on Oct. 30, tells us that it is to be a reference work, complete in two volumes, and not a yearly publication, as we implied.

New Inventions

A CERVICAL BIOPSY KNIFE

IN suspected early cases of carcinoma of the cervix uteri, biopsy of the cervix should include representative tissue from all four quadrants of the cervical squamocolumnar junction. Various special instruments have been designed for this purpose, but they are not easily obtained in this country. Faced with the need for a biopsy knife which allows a satisfactory ring biopsy of the squamocolumnar junction of the cervix, I have recently modified an ordinary ophthalmic knife for this purpose.

Fig. 1—Modified ophthalmic knife with spear-pointed blade.

Fig. 2—Blade set at 140° to axis of handle.

The knife has a spear-pointed blade (fig. 1) 1 inch long and $^{6}/_{16}$ inch broad at its base, set at an angle of 140° (fig. 2) to a handle 8 inches long.

To obtain a ring biopsy specimen of the cervix with the knife the cervix is exposed with a speculum and held in position with volsellum forceps in the usual way. The point of the blade is inserted into the cervix just outside the squamous margin of the squamocolumnar junction, with the lip of the blade directed towards the cervical canal. Light pressure on the handle of the knife causes the tip of the blade to reappear in the cervical canal (fig. 3). The blade is then carried gently round through a complete circle so that the squamocolumnar junction is completely excised (fig. 4). The amount of bleeding which follows the removal of the specimen is surprisingly small and is easily controlled by cauterisation of the raw surface. Representative areas from each quadrant of the biopsy should be examined microscopically.

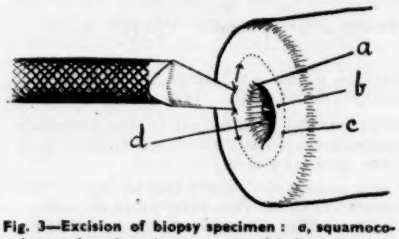

Fig. 3—Excision of biopsy specimen: *a*, squamocolumnar junction; *b*, squamous epithelium covering cervix; *c*, outer limit of biopsy specimen; *d*, columnar epithelium lining cervical canal.

Fig. 4—Complete specimen after removal.

The ophthalmic knife was modified for me by Messrs. Down Bros., and the cost of the modification borne by a grant from the Research Fund of King's College Hospital. Dr. Alan Blake kindly drew the diagrams.

King's College Hospital, London

J. M. BRUDENELL M.B. Lond.

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THE LANCET
LONDON: SATURDAY, NOV. 27, 1954

A New Liver Disease

CLINICAL jaundice arises from hæmatological disorders associated with hæmolysis, from disorders of the liver parenchyma, or from lesions causing obstruction to the bile-ducts. When hæmolytic disease and biliary obstruction can be excluded the jaundice is nearly always found to be due to some obvious disorder of the liver, such as infective hepatitis. But at the turn of the century GILBERT [1] recognised cases of jaundice characterised by the absence of hæmolysis and of any anatomical lesion in the liver or its ducts. These were presumably examples of the condition later described by DAMESHEK [2] as "familial non-hæmolytic jaundice" and by ROZENDAAL et al.[3] as "constitutional hepatic dysfunction." It now appears that these cases do not all belong to one nosological entity. DUBIN and JOHNSON,[4] after studying the material available at the American Armed Forces Institute of Pathology, have segregated a group of 12 cases whose clinical and pathological features clearly distinguish them from others with features of "constitutional hepatic dysfunction."

In all 12 patients the outstanding clinical feature was jaundice, which was fluctuating but rarely intense, and which persisted indefinitely. In nearly every case the jaundice was associated with abdominal pain, and in about half the cases with weakness, anorexia, nausea, vomiting, and hepatomegaly. The age at onset ranged from shortly after birth to 42 years, and the duration of symptoms from 8 months to 33 years, exceeding 5 years in 6 patients. The condition tended to relapse in association with intercurrent disease or stress of various kinds. When the onset occurs in this way, the condition is readily misdiagnosed as infective hepatitis. Laboratory investigations point most strongly to biliary obstruction. Thus the serum-bilirubin level ranged from 3 to 6 mg. per 100 ml.; and about half of this gave a direct van den Bergh reaction. Biliuria was commonly present, and in 10 of the 11 patients subjected to cholecystography (with double the usual amount of dye in some instances) the gall-bladder was not displayed. Evidence of excessive hæmolysis was lacking in all cases, and signs of parenchymal damage were relatively slight. The most consistent of these signs was impaired bromsulphthalein excretion; retention of this exceeded 10% in 8 of the 11 patients tested, but it exceeded 20% in only 3. No abnormality was found in the serum-protein levels, and the results of flocculation tests were with few exceptions well within the normal range. The only evidence against biliary obstruction was the persistence of normal-coloured stools, of urobilinogen in the urine, and of normal alkaline-phosphatase and cholesterol levels in the serum. In view of the clinical picture it is not surprising that most of these patients were subjected to laparotomy. In no case was any significant obstruction of the biliary passages found, despite direct cholangiography in some instances. In 6 of the 8 patients operated on the liver was smooth, with no evidence of scarring. The outstanding macroscopic abnormality of the liver—which incidentally was also conspicuous in the samples obtained by needle biopsy—was its colour, which was variously described as "dark blue green," "slate grey blue," or "black." This pigmentation was also the only consistent microscopic abnormality; some scattered areas of focal necroses were present in 1 case, and occasional slight fatty infiltration in a few others. The pigment was in coarse brown granules, concentrated most heavily in the centrilobular parenchymal cells; the Kupffer cells were unaffected. Histochemical study excluded the presence of bile-pigment or iron. The pigment resembled somewhat the lipochrome pigments associated with wear-and-tear, and ceroid; but these were definitely excluded on the basis of several of the histochemical reactions. The pigment resisted all attempts to dissolve it, and hence it has not been finally identified. DUBIN and JOHNSON suggested that it may represent an alternative pathway of hæm katabolism yielding dipyrrols instead of the usual tetrapyrrols; polymerisation of these dipyrrol fragments then yields highly insoluble pigments such as the meso-bilifuscins. Other investigations gave no indication that the hepatic condition was part of a general disturbance of pigment metabolism.

DUBIN and JOHNSON, before claiming that these 12 cases represent a new clinicopathological entity, rightly discuss differentiation from known syndromes, including Gilbert's disease (familial non-hæmolytic jaundice), hyperbilirubinæmia as a residue of viral hepatitis,[5] a similar clinical picture associated with chronic gastro-intestinal disturbances, such as peptic ulcer and colitis,[6] and some cases of biliary stasis and hæmolytic jaundice. From all these the new syndrome can apparently be clearly differentiated by its non-familial character, the biliuria, the direct van den Bergh reaction, the failure to display the gall-bladder by cholecystography, and the remarkable pigmentation of the liver cells. As regards ætiology little can at present be said, but DUBIN and JOHNSON incline to the view that it represents an inborn error of metabolism whereby the liver cannot adequately excrete such substances as bilirubin, the pigment that accumulates in the liver cells, bromsulphthalein, and the dyes used in cholecystography. But since the disorder sometimes does not appear until adult life it may arise as an acquired condition.

The recognition of this disorder is not merely of academic interest. Many cases of it have probably been diagnosed as chronic hepatitis, with a correspondingly poor prognosis; whereas according to the present evidence the prognosis of the new syndrome is good. Moreover from clinical, laboratory, and pathological evidence the indications for laparotomy would in many of these cases seem irresistible and awareness of this syndrome and of the possibility of recognising it by biopsy may save patients from useless surgery.

1. Gilbert, A., Lereboullet, P. *Sem. méd.* 1901, **21**, 241.
2. Dameshek, W., Singer, K. *Arch. intern. Med.* 1941, **67**, 259.
3. Rozendaal, H. M., Comfort, M. W., Snell, A. M. *J. Amer. med. Ass.* 1935, **104**, 374.
4. Dubin, I. N., Johnson, F. B. *Medicine, Baltimore*, 1954, **33**, 155.
5. Hult, H. *Acta med. scand.* 1950, **138**, suppl. 244.
6. Welin, G. *Nord. med.* 1945, **25**, 575.

Memory and the Temporal Cortex

MOST of the temporal cortex was long regarded as a silent area of the brain, despite the work of HUGHLINGS JACKSON,[1] who found that a patient subject to "dreamy states" had a tumour of the right temporo-sphenoidal lobe. The present interest in the functions of this area in health and disease is largely due to the outstanding work of Prof. WILDER PENFIELD and his colleagues.[2–5] Their work has consisted mainly in a detailed analysis of the clinical manifestations of epileptic discharges arising in this area and a series of brilliantly controlled experiments on the results of electrical stimulation of the cerebral cortex of man under local anæsthesia. Lesions in the temporal lobes may not give rise to any physical signs until they are gross, but they often manifest themselves by focal or generalised epileptic fits whose aura the patient may or may not recall.[6] Lesions giving rise to such fits are sometimes microscopical,[7 8] and therefore on investigation the only abnormality may be an abnormal focus in the electro-encephalogram. GIBBS and his co-workers [9] have in particular studied the frequency of focal discharges in the anterior part of the temporal lobe, and undoubtedly many patients with epilepsy which would previously have been classified as "idiopathic" are in fact suffering from focal fits which originate in this area.[10]

In the Maudsley lecture to the Royal Medico-Psychological Association on Nov. 4, Professor PENFIELD was primarily concerned with the light that his studies have thrown on the function of the human brain and in particular on mechanisms that may underlie memory. He showed that electrical stimulation of certain parts of the temporal cortex may cause the patient to relive previous experiences while still aware of his present environment—a state that HUGHLINGS JACKSON referred to as "a sort of mental diplopia." Apparently this is brought about only when the temporal cortex has in some way been conditioned by frequent epileptic discharges. These psychical hallucinations may be visual or auditory, but once elicited the pattern of memory proceeds in orderly fashion and always in the correct chronological sequence. The hallucinations are always familiar, but the patient may not remember experiencing the incidents so recalled or what preceded or followed them. Stimulation of this area may also give rise to psychical illusions, or "a false interpretation of a present experience"—for example, a feeling of familiarity or a feeling of fear or loneliness. If the stimulus is applied to the region of the amygdaloid nucleus the patient's behaviour becomes confused and automatic, and remains so throughout the stimulation and during the subsequent period of ganglionic exhaustion. Professor PENFIELD considered the possibility that automatism is due to impulses passing inwards from the region of the nucleus to the upper part of the brain-stem—an area of integration which he refers to as the centrencephalic system. The arrival of these impulses in this area seems to cause a loss of the capacity to record the sensory impressions that underlie consciousness. The results of these experiments are closely correlated with Professor PENFIELD's classification of the temporal-lobe epilepsies. He divides these attacks into experiential, interpretive, and amnesic. The first group includes the psychical hallucinations, or "flash-backs" to previous experiences; the second the psychical illusions already referred to; and the third the states of automatism and confusion.

It is still uncertain whether the epileptic or electrical stimulus is the direct cause of the reactivation of a previous experience, or whether these stimuli by preventing the normal functions of cortical cells release certain underlying mechanisms. But the discovery that this reactivation can result from cortical stimulation has unlocked one of the doors to the understanding of cerebral function. Only one area of the brain where sensory impulses of all kinds can be integrated is in the upper part of the brain-stem; and from this centrencephalic system impulses can be projected to both temporal lobes. In the temporal cortices the impulse may pass from one cell to another through synaptic barriers in a pattern which can later be reactivated and give rise to a "memory"; and Professor PENFIELD's hypothesis depends on the possibility that the facilitation produced by the passage of these impulses has some permanence. That this may be so is suggested by the correct time sequence of events evoked by stimulation. Possibly these "ganglionic records" are complete for the patient's conscious life but can only be reactivated to a very limited extent by voluntary recall, and it is apparent, from the differences between memories that are voluntarily recalled and those that result from abnormal stimulation of the cortex, that patterns of memory are progressively influenced by subsequent experience. The notion that memory of past events is bilaterally represented is supported by the observation that unilateral excision of part of a temporal cortex from which a recollection of a past event has been elicited by stimulation does not prevent the patient later voluntarily recalling the same memory.[11] The physical illusions that may arise from stimulation of the temporal cortex take the form of disturbed judgment of a present experience. Study of these phenomena supports the belief that in some way a new experience is linked with the recording of previous similar experiences. Thus the temporal cortex is being continually used in interpreting present data; for instance, on meeting a friend whose appearance has been almost forgotten, not only is he recognised but it is also perceived that he has aged.

The grouping of the sites of stimuli resulting in automatism in the vicinity of the amygdaloid nucleus is most striking. The result of this stimulation is loss of the ability to lay down patterns of memory which can subsequently be recalled. Possibly the passage of impulses inwards from this area to the centrencephalic system upsets the normal processes of integration within that system; but the persistence

1. Hughlings Jackson, J. *Brain*, 1888, **11**, 179.
2. Penfield, W., Erickson, T. C. Epilepsy and Cerebral Localisation. London, 1941.
3. Penfield, W., Rasmussen, T. Cerebral Cortex of Man. New York, 1950.
4. Penfield, W., Kristiansen, K. Epileptic Seizure Patterns. Springfield, Ill., 1951.
5. Penfield, W., Jasper, H. Epilepsy and the Functional Anatomy of the Human Brain. London, 1954.
6. See *Lancet*, 1954, i, 248.
7. Falconer, M. A. *Brit. med. J.* Oct. 23, 1954, p. 939.
8. Earle, K. M., Baldwin, M., Penfield, W. *Arch. Neurol. Psychiat.* 1953, **69**, 27.
9. Gibbs, F. A. *J. nerv. ment. Dis.* 1951, **113**, 522; Bailey, P., Gibbs, F. A. *J. Amer. med. Ass.* 1951, **145**, 365.
10. Lennox, W. G. *Neurology*, 1951, **1**, 357.
11. Penfield, W. *Arch. Neurol. Psychiat.* 1952, **67**, 178.

of automatism throughout the period of stimulation and of ganglionic fatigue suggests that automatism is a "release phenomenon" and may perhaps be due to temporary loss of function in certain well-defined cortical areas, whether from the occupation of these areas by an epileptic discharge or from their exhaustion. Automatism may thus be comparable to the paralysis accompanying and following a focal epileptic discharge arising in the motor cortex. The greater complexity of the results of an absence of normal function in the temporal lobes accords with what would be expected from the complexity of the normal integration in these areas. Finally, Professor PENFIELD stressed that the centrencephalic system does not act on its own but only in unison with other parts of the central nervous system; and he suggested that it is within this system that the content of consciousness is selected. Thus a record of only certain aspects of the environment to which attention is given will be made among the ganglionic connections of the temporal lobes.

Annotations

COLLEGE OF GENERAL PRACTITIONERS

THE new college held its second annual meeting last week, and some details appear on a later page. The college has accomplished much in the past year, and its report [1] illustrates how well it is getting down to its task of improving the efficiency and good name of general practice. Among its foremost concerns have been the setting up of regional faculties, of which there are now 22 in the British Isles and 5 overseas, and the promotion of research in general practice. The response to the college's research plans shows how promising are the possibilities and how much has been lost by not tapping this store of original observations in the past.

At last week's meeting Dr. G. F. Abercrombie, chairman of the college council, said that the most pressing question before them was to decide on the criteria for associateship and membership. The council have given much thought to the alternative proposals, and, with the help of a questionary circulated to members, they drew up the recommendations which we publish on p. 1119; and the meeting readily accepted these proposals. So associateship will be open to all doctors who wish to be linked with the college in any way, including those recently qualified and still in their preregistration year. For membership, as no single criterion could be found which would invariably admit all the many different types of good family doctor, applicants are to be asked to submit evidence of all their medical activities, over as wide a range as possible, and this evidence will be considered by a board of censors.

The questionary showed that the majority of existing members were against admission to membership by formal examination; but a committee has been set up to study in detail the possibilities of an examination in the future. The college's report sets out the arguments for and against an examination; and a good case can be put for either side. Certainly it would be less disagreeable for a candidate to fail an examination in the traditional way rather than be rejected because the quality of his practice or his service to his patients was not up to the required standards—even though those standards were high, as they must be if membership is to mean what the college wants it to mean. On the other hand, admission to the Medical Register implies that a man has an adequate knowledge of medicine; and it seems likely that the quality of his practice will benefit more from the better application of that knowledge than from the clearing of another examination hurdle.

All are agreed that membership of the college should be the "hallmark of the first-class practitioner." But the standards adopted must certainly not exclude those doctors of average academic ability who, in the words of the report, are prepared to make the extra effort, in their daily work, which will rank them among those who are maintaining and raising the value of general practice to the community—"a task in which conscience is more important than academic ambition." It is in the encouragement of such people and in the propagation of their example that the college's first duty lies.

1. College of General Practitioners, 14, Black Friars Lane, London, E.C.4: Second Annual Report, 1954. The central office of the college is at 54, Sloane Street, London, S.W.1.

AGAMMAGLOBULINÆMIA

ABSENCE of serum gamma-globulin associated with recurrent sepsis was first reported by Bruton [1] in 1952. Bruton detected this disorder in an 8-year-old boy who had had nineteen episodes of pneumococcal infection and had had mumps three times. Similar cases have been reported in children [2]; and Gitlin,[3] reviewing experience at the Children's Medical Centre, Boston, records fifteen cases, all in boys. He suggests that in this syndrome the deficiency of gamma-globulin is probably congenital, and that it may be a sex-linked inherited recessive characteristic. Since the outstanding feature of the condition is extreme liability to infections, which often are very severe, it is unlikely that affected children would have survived to adult life, particularly in the days before antibiotic therapy. Absence of gamma-globulin has, however, been reported in adults [4–6]; and it has been suggested that in these cases the deficiency has been acquired later on in life, especially as in childhood the patients had been relatively free from infections.

In this issue Professor Martin describes the results of electrophoretic analysis of sera from four very small premature babies. In the two smallest, gamma-globulin was either completely absent or was present in very small amounts; and Martin suggests that the clinical syndrome of agammaglobulinæmia may be due to the persistence of the early fœtal pattern of serum-proteins. In an earlier study of serum-proteins in premature infants, Norton et al.[7] reported that the gamma-globulin level was high at birth and fell to half the original value in about three weeks. None of the infants studied by Norton et al. were as immature as those studied by Martin; and it is quite possible that gamma-globulin may be passively transferred to the infant in the later stages of pregnancy as Moore et al. [8] suggested. After birth the gamma-globulin level falls more rapidly than the level of diphtheria antitoxin, which is known to be passively transferred from the mother [9]; but the gamma-globulin fraction probably contains many antibodies with varying degrees of "half-life."

It is interesting that in nearly all but one of the reported cases of agammaglobulinæmia in children the patients were boys. The one exception, described by Keidan et al.,[10] differed also in that the patient developed fatal generalised vaccinia after vaccination, whereas in most of the other cases vaccination led to a normal primary take followed by an immune response two to

1. Bruton, O. C. *Pediatrics*, 1952, **9**, 722.
2. Janeway, C. A., Apt, L., Gitlin, D. *Trans. Ass. Amer. Phycns*, 1953, **66**, 200.
3. Gitlin, D. Address at 27th Graduate Fortnight, New York Academy of Medicine, Oct. 27, 1954.
4. Grant, G. H., Wallace, W. D. *Lancet*, Oct. 2, 1954, p. 671.
5. Sanford, J. P., Favour, C. B., Tribeman, M. S. *New Engl. J. Med.* 1954, **250**, 1027.
6. Monckford, von C. *Schweiz. med. Wschr.* 1954, **84**, 1033.
7. Norton, P. M., Kunz, H., Pratt, E. L. *Pediatrics*, 1952, **10**, 527.
8. Moore, D. H., Du Pan, R. M., Buxton, C. L. *Amer. J. Obstet. Gynec.* 1949, **57**, 312.
9. Barr, M., Glenny, A. T., Randall, K. J. *Lancet*, 1949, ii, 324.
10. Kiedan, S. E., McCarthy, K., Haworth, J. C. *Arch. Dis. Childh.* 1953, **28**, 110.

three weeks later[8]; but, antibodies against vaccinia virus, which were absent in the girl described by Keidan, were also absent or present only in very low titre in the boys even after repeated vaccinations. The antibody response to vaccinia is complex—at least three components are involved[11]—and possibly the response may be partly deficient, and such a response provides some protection against generalised spread.

Absence of gamma-globulin has also been reported in another group of conditions characterised by œdema and hypoproteinæmia.[12–14] The hypoproteinæmia is not due, as in nephrosis, to loss of protein in the urine, nor to a dietary deficiency; and it must be due to a failure of synthesis. These patients form some antibodies, and are less susceptible to infections than the other group.

Thus gamma-globulin may apparently be deficient in several different clinical syndromes. It is probably rarely completely absent; methods of analysis more sensitive than electrophoresis, such as fractionation[14] or a serological technique devised by Gitlin,[15] have shown that very small amounts may be present. Gamma-globulin is probably a complex substance whose composition may vary from time to time in response to differing antigenic stimuli. Partial or complete deficiencies may occur as congenital abnormalities of chemical structure, analogous to afibrinogenæmia, hæmophilia, and the various inborn errors of metabolism. Deficiency may also arise through some environmental change the nature of which is not understood.

From the clinical aspect the most important syndrome is that described by Bruton.[1] Severe recurrent sepsis in a young child, particularly if the same type of infection is recurring, should lead to investigation of the serum-protein fractions. If gamma-globulin is found to be absent or present in very small amounts, repeated large doses of pooled gamma-globulin should be given prophylactically. Whether in Britain large supplies of this would be forthcoming for an indefinite period has yet to be proved.

FUNCTIONS OF THE CLAVICLE

THE clavicle is usually supposed to have four functions: (1) it holds the scapula away from the body and thus acts as a prop when the arm is abducted; (2) it serves for the attachment of muscles; (3) it protects the great vessels and nerves in the neck; and (4) through the coraco-clavicular ligament it supports the scapula. But since patients with congenital absence of the clavicle are in no way disabled the clavicle is clearly not indispensable.

The clavicle may have to be excised for tumours, infections, or injuries; for dysfunction of the sterno-clavicular or acromioclavicular joints; or to expose the vessels and nerves at the root of the neck. Elkin and Cooper[16] and Holman[17] have emphasised the importance of wide exposure when dealing with vascular injuries in the root of the neck, and have proposed that removal of part of the clavicle should be followed by no attempt at repair or replacement. Wangensteen[18] has attempted clavicular repair after resection; but non-union was rather common. Shumacker[19] favours repair of the clavicle after subperiosteal resection, by packing the clavicular bed with bone chips.

Abbott and Lucas[20] suggest that the functions of joints in which the clavicle takes part are related to integrity of two extra-articular ligaments: the coracoclavicular and acromioclavicular. Success of any operation involving partial excision of the clavicle rests on retaining these two ligaments; and operations involving resection at either end must stop short of these ligaments. Resection of the middle third of the clavicle between the ligaments is satisfactory; if extended beyond either ligament it must be continued to the end of the bone. Complete excision of the clavicle should be followed by suture of the sternomastoid to the pectoralis major, and of the trapezius to the deltoid. Abbott and Lucas remark that removal in this way is followed by no loss of function and no deformity.

11. McCarthy, K., Germer, W. D. *Brit. J. exp. Path.* 1952, **33**, 529.
12. Schick, B., Greenbaum, J. W. *J. Pediat.* 1945, **27**, 241.
13. Bound, J. P., Hackett, W. R. *Arch. Dis. Childh.* 1953, **28**, 104.
14. Fried, C. T., Henley, W. L. *Pediatrics*, 1954, **14**, 59.
15. Gitlin, D. *In* Year Book of Pediatrics, 1954–55. Chicago 1954; p. 52.
16. Elkin, D. C., Cooper, F. W. *J. Bone Jt Surg.* 1946, **28**, 117.
17. Holman, E. *Surg. Gynec. Obstet.* 1944, **78**, 275.
18. Wangensteen, O. H. *Ann. Surg.* 1950, **132**, 839.
19. Shumacker, H. B. jun. *Surg. Gynec. Obstet.* 1947, **84**, 245.
20. Abbott, L. C., Lucas, D. B. *Ann. Surg.* 1954, **140**, 583.

RESEARCH FELLOWSHIP IN MENTAL HEALTH

OF every 100 patients nowadays admitted to our mental hospitals, 70 go out recovered or relieved, 90% of them within a year of admission. These improved prospects for mental patients must be credited very largely to modern physical methods of treatment, which have undoubtedly shortened the average duration of stay in hospital. These methods—especially electro-convulsive therapy, insulin treatment, and prefrontal leucotomy—have been very widely studied in action, yet it is still impossible to say exactly how they produce their effects. They are used empirically, as other remedies have been used in the past, because they get results. It may be said of mental treatment, in fact, that in no field of medicine has advance of late years been more rapid, and none suffers more severely from the need for fundamental research: we have as yet mapped neither the physiology nor the pathology of the brain. Much research is in progress, but far more is needed, and it is therefore welcome news that the Mental Health Research Fund are offering their first fellowship, to be held by a suitably qualified person "wishing to pursue full-time research work bearing on problems of mental health, whether in clinical psychiatry or in one of its supporting sciences." The fellowship, which is advertised on p. 44, carries a salary in the range of £1000–1500 and will be for two years in the first instance, and renewable for a further year.

MEASUREMENT OF MORBIDITY

MUCH has been said about the scientific dividends which might accrue from a study of the distribution of sickness in industrial and other sections of the community, but progress has been bedevilled by variously expressed accounts of sickness experience. Comparability is essential to those contrasts of morbidity-rates in differing conditions which form the basis of epidemiological inquiry. But comparability means definition—precise, detailed, unequivocal, indeed legalistic—a task which few relish. For that reason we are indebted to a sub-committee of the Registrar-General's Advisory Committee, who have, under the chairmanship of Professor Bradford Hill, produced a code of practice in the measurement of morbidity.[1] Their brief report defines the various rates which may be used to describe how disease affects a community. Most of them have been made familiar by their use in Dr. Percy Stocks's studies of morbidity in England and Wales.[2] There are, however, certain points of difference; thus, the rate of onset of "spells" or periods of absence is called an "inception" rather than an "incidence" or "ægrescence" rate. Where possible, the report uses terms and skeleton definitions which have the merit of long usage, merely adding precision and detail to produce more comprehensive descriptive measures of sickness experience.

These morbidity-rates can be used to good effect in surveys of sickness—for example, by sample inquiries in the population at large or in the measurement of economic loss in industry. In judging such loss, measures

1. Studies on Medical and Population Subjects, no. 8. Measurement of Morbidity. A Report of the Statistics Sub-Committee of the Registrar-General's Advisory Committee on Medical Nomenclature and Statistics. 1954. H.M. Stationery Office. Pp. 12. 1*s.* 6*d.*
2. Stocks, P. Sickness in the Population of England and Wales in 1944–47. H.M. Stationery Office, 1949.

of the prevalence of absence at specified times, such as in the Post Office at Christmas, may be of crucial importance to management. On the other hand, duration of absence can be measured either in "calendar" days when weekends are included or "working" days which depend on the length of the working week. We would welcome a clear national lead on this point, which would be followed by the Ministry of National Insurance and major industrial concerns. "Operational research," in the sense of comparison of loads and functional efficiency in the National Health Service, whether in general practice, public-health department, or hospital, will ultimately depend on the comparison of the pressure of sickness on the resources of these services and the effectiveness of the services' response. In all this, the calculation of standard rates will be an essential part of the research; but, as the committee emphasises, a complete understanding of their significance can come only from a flexible arrangement of collected data into detailed distributions.

CULTIVATION OF RUBELLA VIRUS

THE application of tissue-culture techniques to the cultivation of the viruses of man continues to yield rich harvests. On p. 1107 of this issue Dr. Anderson shows how he has persuaded rubella virus to grow in the test-tube, using techniques similar to those which Enders and his co-workers have applied so successfully to cultivating poliomyelitis,[1] chickenpox,[2] and measles[3] viruses. Throat washings from a patient with typical rubella inoculated into cultures of monkey-kidney tissue produced characteristic changes in the cell outgrowth. There was a considerable increase in the number of multinucleate-cell areas and an increased proportion of large mononucleate cells. These changes were transmissible in series and could also be passed to cultures of human embryonic lung. There is suggestive evidence that this effect is neutralised by convalescent rubella serum but not by convalescent measles serum. This last point is important because the changes described in these cultures resemble to some extent those that Enders and Peebles[3] reported recently for measles virus.

Obviously many further investigations are required before it can be stated with some assurance that rubella virus has been cultured in vitro, and Anderson is the first to recognise this. Some evidence of the filtrability of the transmitted agent is required, and further news from Melbourne on this and other points will be awaited with great interest. Subject to these qualifications it seems reasonable to conclude, with Anderson, that a case has been made that rubella virus has been grown in tissue-culture. In many ways it is very fitting that this discovery should originate in Australia, whence so many important contributions to our knowledge of rubella have already come. We have to thank Australian workers[4,5] for our knowledge that rubella in early pregnancy may produce congenital abnormalities of the child, and Anderson and co-workers[6,7] have previously studied this infection in volunteers and contributed valuable knowledge on the possible use of gamma-globulin in prophylaxis.

There is no reason to think that their discoveries will end here. We are conditioned to believe today that once a virus has been grown in the test-tube it should not take long to develop a safe vaccine. We can visualise the day when young women contemplating matrimony will have their sera tested for rubella antibody; and unless they can show evidence of past infection they will receive a dose of tissue-culture "vaccine."

1. Enders, J. F., Weller, T. H., Robbins, F. C. *Science*, 1949, **109**, 85.
2. Weller, T. H. *Proc. Soc. exp. Biol., N.Y.* 1953, **83**, 340.
3. Enders, J. F., Peebles, T. C. *Ibid*, 1954, **86**, 277.
4. Gregg, N. M. *Trans. ophthal. Soc. Aust.* 1941, **3**, 35.
5. Swan, C., Tostevin, A. L., Black, G. H. B. *Med. J. Aust.* 1946, ii, 889.
6. Anderson, S. G. *J. Immunol.* 1949, **62**, 29.
7. Anderson, S. G., McLorinan, H. *Med. J. Aust.* 1953, i, 182.

UNIVERSITY SALARIES

DETAILS of the new salary scales for full-time university teachers, announced by the Chancellor of the Exchequer last week, are given in our parliamentary columns (p. 1121). The new scales have been recommended by the University Grants Committee after consultation with the Committee of Vice-chancellors and Principals. The possibility of raising university fees is at present being considered by the Committee of Vice-chancellors and Principals, but not in relation to any particular item of expenditure such as salaries, and if the committee recommends an increase it would be some time before it became effective. The annual £2¼ million, which will be required immediately, to meet the new salary scales will be provided, Mr. Butler explained, by a recurrent Exchequer grant.

CLOSING A BREACH?

WESTERN scientists have often complained of excessively polemical treatment, or misrepresentation, in the Soviet scientific press; and it is pleasant to find a different note struck in the first of a series of reviews devoted to biological theory in the West which has recently appeared in the *Bulletin of the Academy of Sciences of the U.S.S.R.* This seems all the more significant because the subject selected for this review is one which has done more to divide and antagonise Western and Soviet scientists than any other. Few controversies can have done as much mischief to the unity of science as that between East and West over the mechanisms of inheritance and the work of Lysenko—not so much because of its scientific content, as because of the political animosity and personal abuse with which it has been conducted.

In this first review Kremyanski[1] deals with "the present state of Morganism"—in other words, of "orthodox" Western genetics. The paper is a scholarly, comprehensive, and documented study of the movement of thought in non-Soviet work from the beginning of the century to the present time. It is almost wholly non-polemical. Soviet writers have tended in the past to ascribe the most extreme genetic determinism to Western biologists in general, and to attack Western genetics on that basis. Kremyanski lays stress on the movement of Morganism towards the acceptance of a far more qualified picture of gene action, coupled with the recognition of non-genic mechanisms of inheritance. He presents in two columns the different conceptions of gene and chromosome action which characterise "old" and "neo"-Morganism, and the second of these is a recognisably critical picture of the kind of genetics to which most Western biologists would probably subscribe. There is an exhaustive review of the significance of crossing-over, of chromosome structure, and of chromosomal and non-chromosomal theories of hybrid vigour. The general drift of this analysis is to emphasise first that Western genetics is not static, and second that it is coming closer to the position adopted by Soviet genetics. This second conclusion may displease those who rejected Lysenko root and branch, and still reject him as a heresiarch; but there is little doubt that, in the words of Strong, "the gene is emerging from its ivory tower," and if Soviet scientists construe the growing Western interest in extranuclear inheritance as evidence of a change of heart nobody will wish to quarrel with that view. The paper ends with several hundred references to Western genetical papers.

If other branches of research in the non-Communist world get as courteous a presentation from subsequent reviewers, a damaging fissure in scientific good will will have been closed. One would like to see Western psychology accorded as generous treatment. It is very much to be hoped, at the same time, that if Western comments upon Soviet science do not cease to be critical, they will

1. Kremyanski, V. I. Nekotor'ie voprosi obshchei biologii v sovremennoi literature Zapada. O sostoyanii Morganizma. *Bull. Acad. Sci. U.S.S.R.* (Biol.), 1954, **4**, 97.

at least display the same controversial good manners. Nobody on either side of the world has been edified by the sight and sound of scientists shouting abuse at each other.

OCCUPATIONAL HEALTH SERVICE

SINCE the passing in 1802 of the first Factory Act, which restricted hours of work in the textile factories established during the Industrial Revolution, much has been done by legislation towards improving conditions of work in industry. Succeeding Acts of Parliament have laid down basic measures for preventing accidents, fatigue, and ill health; and these are enforced by the inspectors of the Factory Department. Nevertheless the day-to-day maintenance of their employees' health is still largely the responsibility of the individual firms. Many, it is true, possess efficient and comprehensive health services, providing first-rate treatment as well as physiotherapy, occupational therapy, and reablement courses. But these are exceptional; and clearly only large firms, or the combined resources of a number of small establishments, can provide facilities on such a scale. In some areas the need for improvement is urgent: Laidlaw and Bell,[1] investigating working conditions in the Govan ward of Glasgow, found that the standard of industrial hygiene was often far from adequate; and there are many areas throughout the country where far more could be done to reduce the incidence of injury and ill health among industrial workers.

What may prove to be the first step towards an industrial medical service on a national scale was announced on Nov. 11 by Sir Walter Monckton, Minister of Labour and National Service, when he told the House of Commons that, after consultation with industry and with medical and other organisations, he had decided to stimulate the further development of industrial-health services in workplaces covered by the Factory Acts.[2] To this end he is to appoint a Standing Industrial Health Advisory Committee, which will include representatives from industry, from the medical and nursing professions, and from the universities. The "general aim" will be to develop the industrial-health services on a voluntary basis, but where necessary the Minister will use his statutory powers under the Factory Acts. With the aid of the committee, inquiry will be made into where industrial health services most need to be extended, and there will be surveys and investigations to determine the need for preventive measures or research. Naturally, any such serious study of the subject must be welcome. Nevertheless some may share our regret that, after so many years of controversial discussion of improved industrial health services, the Government should only now have reached the stage of collecting data. Those who have come to feel little confidence in the leadership of the Ministry of Labour in this matter will need to be convinced, by energetic progress, that something more is expected of the committee than a reason for continuing to leave things very much as they are.

As a basis for planning there is in fact much information, some of it derived from valuable experiments. For example, the latest report [3] from Slough shows one way in which a united health service can be provided for a large number of separate firms on a large trading estate. Founded with the aid of substantial grants from the Nuffield Foundation,[4] the Slough Industrial Health Service now has a membership of 161 firms, both large and small, employing nearly 16,000 persons. Last year 10,646 new cases were treated by the emergency casualty service, and 40% of these had conditions directly due to occupational causes. 800 cases of social problems were investigated, and a satisfactory solution found for all but 84. The reablement services, both at the central clinic and at the associated centre at Farnham Park, dealt with more than 2000 new patients during the year. These figures speak for themselves of the immediate benefits of such a service; yet in some ways perhaps the most important contribution has been made by the occupational-hygiene team, which investigates problems arising from the use of toxic substances in new processes, and suggests to the firms concerned ways in which these hazards may be overcome. The Slough factories employ a wide variety of industrial processes, which provide ample opportunities for research into industrial hazards, as well as for the routine teaching of the principles of industrial medicine. The three members of the Slough hygiene team hold appointments in the London School of Hygiene and Tropical Medicine, and help to train students for the diploma of public health of London University, as well as giving students from the Royal Institute of Public Health a practical course of instruction.

Clearly there can be little development of the occupational-health service, on the medical side, unless there are enough doctors qualified to do the work. Although industrial health as a specialty has been recognised for some time by many university authorities, lately the number of applicants for courses of instruction in industrial medicine has fallen: indeed the universities of Glasgow, Edinburgh, and Manchester have been obliged to discontinue their courses of instruction for the diploma of industrial health. The fact remains, however, that the teaching of industrial medicine is not separate from medical education as a whole. As McLaughlin [5] has put it, "Occupational or industrial medicine is simply clinical medicine applied to industry." A wider recognition of this principle is necessary if the medical profession is to play an efficient part in the new service.

1. Laidlaw, S. I. A., Bell, J. H. Occupational Health—Survey of Govan Ward, Glasgow. '1953.
2. See *Lancet*, 1954, ii, 1072.
3. The Slough Industrial Health Service. Seventh Annual Report, 1953–54.
4. See *Lancet*, 1953, i, 1241.

A CASE FOR HELP

THIS weekend most of our readers in this country will be getting an appeal from Epsom College, which needs not less than £150,000. The school is one that has a very special claim on our profession, for in its century of existence it has enabled a great number of doctors and their widows to give their sons a good education and the opportunities this affords. Some 6500 boys have gone through the school since it opened on June 15, 1855, and of these about a third have themselves become doctors. During this hundred years the Royal Medical Foundation of Epsom College has kept at the school some 800 foundation scholars, all of whom (until this year) were educated, maintained, and clothed free of charge. Besides these foundation scholarships, there have been exhibitions for "sons of the less fortunate members of the profession" and various scholarships and grants; so that in a recent year, of 352 boarders, no fewer than 100 were receiving help from one College source or another. The full complement of 500 (350 boarders, 150 day boys), which had been planned some twenty years earlier, was reached in 1948; but the war and subsequent restrictions had prevented the necessary corresponding development of premises and equipment; and "inevitably, things have got behind." Anybody who has been concerned with the post-war vicissitudes of other public schools will know that such situations have been virtually unavoidable, especially in a foundation which has always tried to obey its founder's injunction to make no profit and to run on a bare margin. The appeal is rightly and fairly addressed "to all who have cause, whatever it may be, to wish College and Foundation well; who are interested in seeing a good independent school survive without lowering standards, and who recognise that without a substantial contribution from her friends that survival is unlikely."

The donations already received include one from the Queen. The treasurer, Dr. Henry Robinson, may be addressed at Epsom College, Surrey.

5. McLaughlin, A. I. G. *Ibid*, 1953, ii, 105.

Public Health

THE PUBLIC'S HEALTH IN 1953

Chief Medical Officer's Report

IN his report for 1953,[1] Sir John Charles, chief medical officer of the Ministry of Health, draws attention to the commonly held fallacy that, as time goes by, the proportion of the population in the normal working ages in this country will be materially reduced. He points out that the main population change to be expected is towards more old people and fewer children; the working population may in fact become proportionately less but the change will be slight. We are, it seems, approaching the age-distribution to be expected in a stationary population with relatively low mortality. Many more people are now attaining the age of 65 than was the case formerly, but old people are not living appreciably longer; thus, the expectation of life of men aged 65 in the period 1838–54 was 10·8 years and in 1952 it was 12·0 years. So, as Sir John remarks, we are still a very long way from becoming a nation of centenarians.

Examining the basic statistics for 1953 and comparing them with earlier years, Sir John notes that they seem to be attaining a stability "which should provoke our interested questioning." It may be that the gains likely to be yielded by the currently available means of improving health have been almost fully achieved. Nevertheless, the report records several satisfactory points in the figures: the present level of the birth-rate is high enough for the replacement of the population; and the great reduction in tuberculosis mortality in recent years has meant that the death-rate for young women aged 15–19 has been halved since 1949. Again, typhoid fever has virtually disappeared as a public-health problem and diphtheria has been practically eliminated; "but the maintenance of these gains requires unremitting vigilance." On the other side of the picture, there is "the mysterious and inexorable march of cancer of the lung," which continues to claim an additional thousand victims each year, and the slow improvement in the stillbirth-rate.

During 1953, the incidence of *diphtheria*, reached a new low level: 266 cases were notified—0·8% of the total in 1943, when the immunisation campaign was just getting under way. There is still an obstinate focus in Staffordshire, which has hitherto resisted all efforts to eradicate it: 30% of all confirmed cases in 1953 were in Staffordshire—an incidence-rate of 5 per 100,000 population, compared with 0·6 for England and Wales as a whole. The infection was most concentrated in Coseley, which has a population of 35,000, and where 38 cases occurred in 1953—a rate of 107 per 100,000 population. Of these cases in Coseley, 3 died, and none of these 3 patients had been immunised. Discussing the means of estimating the degree of immunity of a community, the report says that to regard immunity as corresponding more or less to the proportion of individuals who have had immunising injections may lead to a serious over-estimate, because the immunity may have disappeared by the end of five years. A new index of immunisation therefore takes into account only those individuals who have been immunised within the previous five years. The report gives striking figures which show how this index gives a much less encouraging estimate of the protection of the population.

As for the slow decline in the *stillbirth-rate*, Sir John suspects that a new examination of the problems associated with childbirth is required. The report mentions that the concept of "perinatal mortality" is being increasingly used to connote a combination of stillbirths with deaths occurring during the whole or part of the neonatal period, but no standard definition of this term has yet been adopted. Probably the most useful combination will prove to be stillbirths plus early neonatal deaths (deaths during the first week). This combination will, it is hoped, avoid the fallacies which are liable to occur when the stillbirth and neonatal rates are considered separately, and so enable a juster estimate to be made of the factors involved in these deaths.

Poliomyelitis was more prominent in 1953 than in the previous year—both in the number of cases and in the total of deaths. The disease is showing a shift in its age-incidence from the younger to the older age-groups, but the significance of this change is not yet apparent. It is by no means certain that the statistics are accurate because, for one thing, there seem to be a number of neurotropic viruses giving rise to illnesses which can be mistaken for mild poliomyelitis.[2]

Typhoid and paratyphoid continued to decline; but the casual, and often mysterious, infection of water, milk, or ice-cream "can still provide the genesis of an epidemic."

Dysentery underwent in 1953 another of its inexplicable increases. Three-quarters of the notified cases are in children under 15, but the explanation may be that notification is better for children than for adults. The total number of incidents of *food-poisoning* was higher in 1953 than in 1952, in spite of the publicity given to this subject. The remedy, the report declares, is largely in the hands of caterers: nowadays there is little excuse for unhygienic practice in the preparation and serving of food, and any omission in the well-known and simple preventive measures is a direct reflection on the management responsible.

For the fifth year in succession a substantial decline in *tuberculosis* mortality was recorded. Deaths were only 40% of the total for 1948. The number of new cases diagnosed also showed a slight decrease. Approximately 1 out of every 12 new cases during 1953 was detected by examination of contacts, and 1 out of every 5 by mass radiography. In November local health authorities were told that the Minister was prepared to approve the extension of B.C.G. vaccination to children during and, if possible, towards the end of the year preceding their fourteenth birthday. The ultimate decision whether to apply for this extension was left to the discretion of local authorities. By the end of the year ten applications for approval of extension were already under consideration.

BLOOD-TRANSFUSION SERVICE

In his report for 1952, the chief medical officer commented on a disquieting rate of increase in the use of whole blood. The demand now seems to be slackening. The increasing part played by pathologists in the transfusion service may have helped to give "a more effective screening of those patients for whom this treatment is ordered."

During 1953 the civilian donor panel passed the half-million mark, in spite of the exclusion of a large number of applicants (5–10% of the whole) who had had jaundice.

MENTAL HEALTH

The changing public attitude to mental illness is reflected in the growing number of patients who voluntarily present themselves for treatment. As hospitals of a more suitable design are built so, it is expected, will the proportion of voluntary patients rise still further. The report says that the outlook for the prevention of mental illness is beginning to look more encouraging: "as our knowledge of the cause and prevention of emotional disorders of children grows so also should benefits accrue in the form of a diminution of mental illness in future generations."

DENTAL HEALTH SERVICES

The inertia of the adult population towards its dental health may be inferred from the fact that not more than 10% of expectant mothers avail themselves of the benefits offered by the service. But the report looks forward to a more enlightened attitude when "those who have experienced prophylactic dentistry from an early age are likely in turn to ensure similar benefits for their children."

1. Report of the Ministry of Health for the year ended Dec. 31, 1953. Part II: On the State of the Public Health, being the annual report of the chief medical officer. Cmd. 9307. Pp. 262. 7s. 6d.

2. See *Lancet*, Nov. 20, 1954, p. 1060.

The mission which studied the fluoridation of public water-supplies in the United States as a means of resisting dental caries recommended that pilot studies be made in selected areas in this country; and preparations are now being made for such studies to be carried out in coöperation with local authorities.

CLINICAL RESEARCH

Welcoming the setting up of the Clinical Research Board, Sir John goes on to say:

"There is now an opportunity, altogether greater than before, to broaden the basis of clinical research in this country, and to give it an appropriate measure of central encouragement. . . . From the broader viewpoint it is surely fundamentally right that a great National Health Service should be identified with the enlargement of the frontiers of knowledge. Clinical research cannot be interpreted narrowly, and is certainly not restricted to the practice of medicine in hospitals. General practice and the community aspects of disease provide other fields for exploration. Preventive medicine, in particular, has great potentialities for the research minded, though in recent years its bounds have been unduly limited by tradition and convention. It is neither venturesome nor perspicacious to suggest that simply by pouring more and more money into extensions of the existing preventive services, greater and greater gains will accrue to the public health. Some benefit would of course follow such extensions, but . . . it is not enough to have more and more of the old remedies for the old ailments of the public health. There are other and abundant fields for inquiry. What is needed is that they should enlist the interest of workers in the universities, medical schools and the health departments of the local authorities."

L.C.C. on Hospitals and Health Centres

The supplementary evidence which the London County Council is submitting at the request of the Guillebaud Committee includes a discussion of the proposal to transfer the hospital service to the local health authorities. The L.C.C. thinks that many advantages would spring from this change.

The hospital service would compete with other parts of the health service in its claims on the resources of a single authority. Again its closer association with the local-authority services for maternity, home nursing, tuberculosis, ambulances, and recuperative holidays would increase economy and efficiency. For instance, differences of policy in dealing with people of unsound mind in urgent need of care and treatment could be smoothed out; elderly patients could be more appropriately distributed between chronic-sick hospitals and welfare homes; the difficult distinction between convalescence (which is free) and recuperative holidays (for which a charge is made) could be eliminated.

The change would also be a return to the principle, to which the L.C.C. subscribes, that the authority which administers a service should be directly responsible to the public for raising revenue and accounting for its use. But the L.C.C. realises that the populations covered by many local health authorities are too small to provide a full range of hospital services. Joint committees of two or three authorities is a possible solution, but one which the L.C.C. admits has not proved popular in the past. Other aspects of the service, in so far as they concern consultants, may also (the L.C.C. agrees) justify the existing structure. All in all the council feels that its experience, limited as it is to the special problems of London, does not qualify it to express a firm opinion on the merits of the transfer. But it holds that the arguments in favour are strong enough to justify a detailed inquiry on a national basis. Such an inquiry should consider how to help the local authorities to shoulder a financial burden which would inevitably be heavier than the one they laid down in 1948.

Besides problems of reorganisation, the L.C.C. also considered possible modifications of the present administrative machinery. It admits dissatisfaction with the boundaries of London's regional hospital boards, which extend into the Home Counties and from the local health authority's point of view are "inconvenient, cumbersome, and inefficient." In our columns Dr. I. Gordon has already pleaded for their revision,[1] but the L.C.C. goes further and boldly proposes a central Metropolitan regional hospital board, co-terminous with the county of London, much as was suggested before the present regions were laid down.[2] The objection that no fewer than 26 teaching hospitals would be included in the new board's area is met by the statement that the teaching hospitals are controlled by their own governors and not by the boards in whose areas they stand, while the special facilities that they offer are already freely available to patients across regional boundaries. The L.C.C.'s suggestion that the remains of the present Metropolitan regions should continue as "areas of home county regional hospital boards" seems to leave a number of awkward questions unanswered.

If, as seems not unlikely, the hospitals retain their present administrative place, the way is open for health centres to take an increasingly important part in integrating local-authority health services and general practice. The council looks forward to a future when a system of health centres and group practices will cover London. Its long-term plans include 160 centres; but in face of the difficulties it met in establishing Woodberry Down it does not expect to build more than one health centre within the next five years.

1. *Lancet*, Oct. 16, 1954, p. 808.

School Epidemics in Yorkshire

In September a febrile illness affected about 500 pupils out of 1685 at schools in Knaresborough. The disease spread to Harrogate and again schools were chiefly involved. The epidemic then appeared to be subsiding, but in the last few weeks it got going again, and it spread to the Ripon and Pateley Bridge areas. In most Ripon schools absentees numbered 40–60% during the week ending Nov. 19; and in one Harrogate school a fortnight ago 306 out of 660 were away on the same day. The main symptoms were headache, fever, nausea, and abdominal pain—which suggested neither influenza nor epidemic vomiting. About half the children had running eyes and nose, and many had a cervical adenitis more severe than could be accounted for by the sore throat or tracheitis. About 10% had severe nose-bleeds and a few vertigo. The illness lasts 3–4 days. Tests have so far been negative for influenza A and B; Q fever, psittacosis, and lymphogranuloma viruses; and the inquiry continues. Similar outbreaks are reported[3] from Alnwick, Northumberland, and Moreton-in-the-Marsh, Gloucestershire.

Tuberculosis in Immigrants

At a meeting on Nov. 8, the North West Metropolitan Regional Hospital Board discussed a report by its tuberculosis committee, which had considered a paper by Dr. E. V. Hess and Dr. N. Macdonald on Pulmonary Tuberculosis in Irish Immigrants and in Londoners.[4] The committee had agreed that the problem of tuberculous immigrants was twofold: (*a*) that of immigrants who have tuberculosis on arrival; and (*b*) that of immigrants who are particularly susceptible to infection. The committee, while appreciating that the matter had been unsuccessfully raised on previous occasions with the Ministry of Health, nevertheless felt that the problem was so serious and urgent that a further approach should be made. It therefore recommended:

1. That the Ministry of Health be informed that the board are of opinion that it is desirable that all immigrants who seek to settle and work in this country should be shown to be free from infective tuberculosis.

2. That the attention of the Ministry of Health be drawn to the fact that numbers of persons susceptible to tuberculosis who come from abroad to live and work in London and other large cities become infected with the disease; and that the Ministry of Health be informed that the board consider that this danger to the immigrants themselves and to others could be minimised if Mantoux testing and B.C.G. vaccination, where necessary, were required to be carried out in the country of origin.

At the meeting of the board Mr. Kenneth Robinson remarked that he had raised this matter repeatedly in the House of Commons. The committee's recommendations were adopted.

2. *Ibid*, 1946, ii, 842.
3. *Times*, Nov. 19, 1954.
4. *Lancet*, July 17, 1954, p. 132.

Special Articles

COLLEGE OF GENERAL PRACTITIONERS

MORE than 300 members and associates of the college attended the second annual general meeting at B.M.A. House on Nov. 20. Dr. W. N. Pickles was re-elected president of the college for 1954–55. A portrait of Dr. Pickles by Mr. Christopher Sanders, A.R.A., was presented to the college by Dr. R. A. Murray Scott, on behalf of the Yorkshire faculty.

The chairman of the college council, Dr. G. F. ABERCROMBIE, after referring to the work of the undergraduate and postgraduate education committees, said that the college research register, which last year contained about 50 names, now stood at nearly 400, so a very considerable expansion of the research committee was required. The plan for the national morbidity survey was complete and there would be a rehearsal of the whole team—about 120—next year. "If this college never does anything else," Dr. Abercrombie declared, "it will still have contributed notably to British medicine by stimulating the interest and coördinating the efforts of hundreds of general practitioners in the field of clinical research."

Turning to the criteria for associateship and membership, Dr. Abercrombie said the question whether an examination should form part of the criteria for entry was the greatest immediate problem before the college. The first council had decided against an examination at present, but had authorised the formation of a committee to study the technique and detail of such an examination if, in the future, it should be decided to introduce one.

The financial report showed that the college had about £20,000 invested, and it was intended to preserve this sum untouched. The council recommended that associates should pay an annual subscription of one guinea but no entrance fee, and that members should pay an annual subscription of three guineas in addition to the entrance fee of ten guineas. If these recommendations were accepted, Dr. Abercrombie said, the college's finances would be on a firm basis.

Paying tribute to the work of the honorary secretary, Dr. John Hunt, Dr. Abercrombie observed that in less than two years the college had grown to include more than 3000 members and associates, with 22 faculties in the British Isles and 5 overseas.

CRITERIA FOR MEMBERSHIP

The annual report, and the council's recommendations it contained, were adopted unanimously. The following criteria for associateship and membership thus become by-laws of the college:

Associateship

A person shall be eligible for admission as an associate if he:

(*a*) (i) Is a registered medical practitioner; or
(ii) Is a qualified medical practitioner during his period of provisional registration. Any person so admitted as an associate shall cease to be an associate if he fails to obtain registration within two years of qualification.
(*b*) Gives an undertaking that he will continue approved postgraduate study if he enters and remains in active general practice, and that he will uphold and promote the aims of the college to the best of his ability.

Membership

(*a*) A person shall be eligible to apply for admission as a member of the college if he:

(i) Is a registered medical practitioner who has been qualified for not less than seven years.
(ii) Is proposed and seconded by two members of the college, these sponsors not being in partnership with each other.
(iii) Has been engaged in general practice either for a minimum period of five years or for a minimum period of three years as an associate of the college.

(*b*) An applicant for membership must satisfy the council of the college of the high standard of his work in general practice by:

(i) Evidence submitted by the applicant himself, on an application form, concerning his practice, experience, and academic and administrative achievements.
(ii) Supporting evidence obtained by the council from the applicant's sponsors, the board of his faculty and, if so required, from others whom he or his sponsors have chosen to appoint.

(*c*) An applicant must also:

(i) Submit himself to an interview with the censors, if required.
(ii) Give an undertaking that he will continue approved postgraduate study while he remains in active general practice, and that he will uphold and promote the aims of the college to the best of his ability.

THE NEW COUNCIL

The following were elected as council of the college for the coming year:

G. F. Abercrombie	Robert Harkness	J. G. Ollerenshaw
G. O. Barber	J. M. Henderson	R. J. F. H. Pinsent
T. R. Bryant	W. V. Howells	F. M. Rose
F. S. Catto	H. L. Glyn Hughes	J. C. T. Sanctuary
K. McL. Cobban	J. H. Hunt	Richard Scott
D. L. Crombie	J. M. Hunter	R. A. Murray Scott
K. M. Foster	David Kyle	George Swift
W. S. Gardner	J. P. J. Little	W. G. Tait
W. W. Gerrard	R. M. S. McConaghey	C. A. H. Watts
Annis C. Gillie	K. A. Mackay	G. I. Watson
F. J. Goddard	Laurence Masterson	J. Campbell Young
St. G. B. Delisle Gray	Charlotte Naish	

At a meeting of the new council Dr. Abercrombie was re-elected chairman, Dr. Rose vice-chairman, Dr. H. L. Glyn Hughes hon. treasurer, and Dr. Hunt hon. secretary.

ENROLLED ASSISTANT NURSES

THERE is a place for enrolled assistant nurses in most fields of nursing; and their numbers may be increased by amending arrangements for their training and by improving their prospects of promotion. These are the broad conclusions of a report[1] by the Standing Nursing Advisory Committee of the Central Health Services Council, which has been commended by the Minister of Health to the attention of hospital and local health authorities.

The committee observes that the enrolled assistant nurse's duties should be clearly defined, and she should work under the supervision of a registered nurse. Her work should consist mainly, but by no means entirely, of basic nursing duties. The proportion of all nursing work that can suitably be done by enrolled assistant nurses will be greatest in the case of long-stay or convalescent patients and smallest in the case of acutely ill patients.

More careful selection of candidates would help to maintain a high standard of training and check wastage during training. The present arrangements for training and examination are generally satisfactory; but it would seem advisable for the pupil assistant nurse to gain her necessary experience of the care of children with sick children, and not solely in nurseries with healthy children. It is essential that her training should be broadly based.

The committee believes (like the Minister of Labour's National Advisory Council on the Recruitment of Nurses and Midwives, but unlike the representative professional bodies that were consulted) that candidates who are lost because they cannot train full time might usefully be recruited for part-time training; and it suggests that there is room for controlled experiments in such training, limited in the first instance to those prepared to work for at least 32 hours a week. This part-time training might be taken by some of those who have discontinued training for the Register after marrying in the second or third year.

As regards status, the committee doubts whether it is wise to lay down hard-and-fast rules on the relative seniority of enrolled assistant nurses on the one hand, and of second and third year student nurses on the other.

1. Central Health Services Council: Report by the Standing Nursing Advisory Committee on the Position of the Enrolled Assistant Nurse within the National Health Service. H.M. Stationery Office. Pp. 10. 6*d*.

Organisation of wards on the basis of nursing units, and fully advising the ward staff as to which qualified nurse they should consult in the absence of their own ward sister or staff nurse, should help to avert difficulties.

In some hospitals, and particularly in chronic-sick wards, the enrolled assistant nurse acts as ward sister or staff nurse. If regularly employed in this way, she should have the chance of promotion to a more senior grade, perhaps with the title of "senior assistant nurse." The main considerations that prevent some enrolled assistant nurses from taking general training are domestic and financial; and the enrolled assistant nurse who wishes to be non-resident throughout such training should be given every facility to live out.

The report deplores the tendency of assistant-nurse training-schools to seek approval to become general training-schools as soon as they can provide enough variety and quality of experience. This "retards the expansion of assistant nurse training facilities which must be achieved if the number of practising enrolled assistant nurses is to be maintained, let alone increased."

The report does not include the committee's findings on mental and mental-deficiency nursing, which the Central Health Services Council has referred to the Standing Mental Health and Nursing Advisory Committees for further consideration.

GENERAL MEDICAL COUNCIL

OPENING the 189th session on Nov. 23, Sir DAVID CAMPBELL, the president, said that at their last meeting the council had approved the first report submitted by the Special Committee on Public Health, charged with the task of revising the rules adopted in 1945 as to courses of study and examinations for the diploma, and of considering applications by Commonwealth universities for the recognition of diplomas granted by them in public health. The power to recognise such diplomas was conferred on the council for the first time by the Medical Act of 1950. Any general revision of the rules would take some time; but it was already clear that the council would need to consider carefully whether a number of changes should be made in the existing rules, which provided among other things for the grant of a certificate as well as a diploma in public health.

The Pharmacopœia Commission expected to submit an Addendum to the 1953 *Pharmacopœia* with a view to its publication in the autumn of 1955. This procedure would conform with the plan proposed by the council in 1947, under which complete new editions of the *Pharmacopœia* would be published at intervals of five years with an Addendum half-way between the publication of editions.

The second edition of the list of approved hospitals and of recognised house-officer posts in Great Britain and Ireland, published in October, gave particulars of 727 approved hospitals, compared with 634 in the original list. Of the 727 hospitals, 531 were in England and Wales (compared with 456 in the first list), 1 was in the Isle of Man, 115 were in Scotland, 26 in Northern Ireland, and 54 in the Republic of Ireland. The total number of recognised posts had risen from 3048 in the original list to 3368 in the new list. 3069 of these posts were in the United Kingdom: 1208 posts in medicine (including its specialties), 1492 in surgery (including its specialties), and 352 in midwifery; 17 provided mixed experience. While the number of posts in surgery thus exceeded those in medicine by 284, time spent in the 352 posts in midwifery might of course be counted, for the purpose of obtaining a certificate of experience, either as time spent in medicine or as time spent in surgery. The council had also issued last month a second edition of a list containing particulars of approved hospitals and recognised posts in Colonial territories. This list, which superseded that issued a year ago, contained 36 hospitals approved for an indefinite period by one or more of three universities—namely, those of London, Oxford, and Wales. The council had also been informed that certain overseas hospitals, not situated in Colonial territories, had been approved by some licensing bodies, either indefinitely or for a purpose limited to the employment in them of specified individuals. The council understand that 8 hospitals in the U.S.A., 4 in Canada, 3 in the Union of South Africa, and 1 in France had been so approved.

At their last session the council had considered a suggestion that, in order to eliminate any brief period which might in some cases elapse between the date on which a provisionally registered person completed his second post and the date on which he could obtain full registration, the council should encourage hospital authorities to issue certificates of satisfactory service a week or two in advance of the date on which the person would actually complete six months' service in his second post. The council were unable to accede to this suggestion. At least one licensing body had been in doubt as to their proper course on being presented with a number of such certificates which had been given before the end of the period of service mentioned in the certificates. The legal position of a licensing body in this matter had now been clearly stated by the legal assessor. "It appears to me that the upshot of his advice is that it is not legally open to a licensing body to grant a certificate of experience to an applicant until, among others, the two following conditions have been satisfied: first, twelve months must have passed since the date when the applicant, having previously passed his qualifying examination, first became engaged in employment as a house-officer in an approved hospital; secondly, six months must have passed since the applicant began to be engaged on his second period of employment. This, I think, should remove any uncertainty which may have been felt in the matter."

Medicine and the Law

Ambulance Driving

THE driver of an ambulance, said to have been carrying a dying man, was charged with dangerous driving.[1] The police evidence was that the ambulance was driven along Jesmond Road, Newcastle, at such a speed that it had to swerve to avoid a car coming out of a side turning and crashed into a trolley-bus standard. On discovering that the ambulance contained a seriously injured patient, the police allowed the driver to proceed. The magistrates dismissed the charge without calling on the defence and awarded costs of £10 5*s*. against the police.

The law with regard to the driving of ambulances is clear enough. They are not subject to the speed limit; the Road Traffic Act, 1934, provides that "the provisions of any enactment . . . imposing a speed limit on motor vehicles shall not apply to any vehicle on an occasion when it is being used for fire brigade, ambulance or police purposes if the observance of those provisions would be likely to hinder the use of the vehicle for the purpose for which it was being used on that occasion."

But such vehicles must obey traffic signals and give priority to pedestrians on what are called "uncontrolled" pedestrian crossings. Breach of the law may lead to an action for civil damages as well as to criminal prosecution. In Ward *v* L.C.C. (1938) a fire engine came to traffic lights; the driver, who had been ringing his bell, seeing no vehicle in the way crossed against the lights.

1. *Daily Telegraph*, Nov. 17, 1954; *Manchester Guardian*, Nov. 17, 1954.

The plaintiff coming along the road at right-angles, with the lights in his favour, passed on to the crossing and hit the engine. The L.C.C., whose engine it was, were held liable in damages. The same principles would apply in the case of an ambulance.

In practice an ambulance driver is not likely to be prosecuted for technical breaches of the law. There will be cases in which there is plainly no risk in crossing against traffic lights, and the driver who does so in such circumstances is hardly likely to be charged. The vast majority of motorists and pedestrians will no doubt feel that it is only reasonable to give way to ambulances even when driven, say, on the wrong side of the road. But if a motorist or pedestrian does insist on his rights and an accident occurs, it will be the ambulance driver who will be liable.

Parliament

Salaries of University Teachers

ON NOV. 16 the CHANCELLOR OF THE EXCHEQUER announced new scales of salaries for university teachers. Academic salaries, Mr. BUTLER said, were last reviewed in 1949, and he was satisfied that a further review was necessary to enable the universities to maintain their standards of recruitment. He had considered recommendations made by the University Grants Committee, after consultation with the Committee of Vice-Chancellors and Principals, and he proposed to ask Parliament to provide the additional funds necessary to enable the universities, as from Oct. 1, 1954, to bring into effect new rates and scales of salary for full-time staff. The necessary increase in the recurrent grant to universities was estimated at about £2¼ million a year.

The new annual salaries proposed are as follows:

CLINICAL POSTS

Professors.—Ranging from £2500 to £2850 (£3100 in certain cases).

Readers.—Within the range of maxima for lecturers.

Lecturers.—Rising from £700 to maxima ranging from £1750 to £2400 (or for lecturers holding posts of special responsibility such as the headship of an independent department, £2750).

PRECLINICAL POSTS

Professors.—Ranging from £2250 to £2850.

Readers.—Within the range of maxima for lecturers.

Lecturers.—Salary rising from £700 to maxima ranging from £1450 to £2050.

NON-MEDICAL POSTS*

Professors.—The grants will be related to basic salaries of £1900 in universities and university colleges. Provision will continue to be made for supplementation and this will allow for a range of salaries up to £2850.

Readers and senior lecturers.—A range of salaries with varying maxima up to £1850.

Lecturers.—Scales rising generally from £650 to £1350.

Assistant lecturers.—Ranging from £550 to £650 a year.

Replying to further questions, Mr. Butler said that he did not think there had been undue delay. He knew that there had been anxiety, and he was aware that the view was fairly widely held that the position had arisen because of the absence of proper negotiating machinery. If anyone had any constructive view to put to him on this matter, without prejudice to the existing provision for consultation, he would be glad to receive the hon. members and anyone they liked to bring to see him.—Mr. WALTER ELLIOT: Would the Chancellor be willing to consider some sort of standing body, because these intermittent negotiations are really difficult and do not come to fruition until a good deal of the damage which we fear has already taken place?—Mr. BUTLER: One cannot speak too highly about the work of the University Grants Committee, and I should not like any language to be used that criticised it; but I have indicated that this is a matter on which thought is necessary, and I should be glad to hear of any constructive ideas.

Mr. H. WILSON asked how far the increases in salaries were to be met by increases in the fees paid by students.—Mr. BUTLER: The cost of the increase in academic salaries will be met by an increase in the Treasury recurrent grant. The question whether university fees should be increased is under consideration by the Committee of Vice-Chancellors and Principals, but not as a matter related to any particular head of university expenditure. The question requires considerable study, and if an increase is decided upon, it will be some time before it can be fully effective.—Mr. WILSON: Apart from the general increase in fees which is being considered, does this mean that the whole cost of the increase of university teachers' salaries will be borne by Exchequer grants?—Mr. BUTLER: Yes, Sir. If there were to be a rise in fees, it might have some effect on university finances, but it is not attached to any particular head of university expenditure.—Mr. ARTHUR WOODBURN: Would the Chancellor keep in mind that raising university fees in many cases simply raises public grants to students and that, if he continues this vicious circle of raising things all round, he makes things worse instead of better?—Mr. BUTLER: The right hon. gentleman should not take it that I have announced that there is to be a rise. I said that this matter was being considered by the Vice-Chancellors Committee, and I think that I ought not to come into it at this stage.

Hospital Priorities

In the House of Commons on Nov. 15 Mr. F. H. HAYMAN drew attention to the delay in implementing the regional board's plans to build a badly needed new area hospital in Cornwall.—In her reply Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, said the West Cornwall Area was acknowledged to be a difficult one. It had a population of 260,000 and 1289 beds. There was no question of the Minister going back on its priority need for an area hospital. Negotiations for the site at Truro would, she hoped, be soon complete. The problem of finding the capital cost from central resources remained. There were general hopes for many hospital priorities—priorities in the new towns where 250,000 people had been moved in, and where there were no hospital beds at all; priority for the teaching hospitals which, like Cornwall, were acknowledged and registered in the Ministry as having a priority claim upon central funds. Though £1 million more than in any previous year had been allocated this year to the National Health Service they could not see an opportunity of including a priority scheme of this magnitude—the Cornish hospital might well cost £1 million—within the next two years. Priority this year, and probably also next year, would be deliberately given to the mental hospital side. Cornwall had had its fair share in that, and she hoped that it would be possible for an allocation to be made to finance an area hospital as soon as the main general allocation was increased. This scheme was too big for a regional allocation. No new general hospital had yet been centrally financed since the start of the health service. The first new project of the service, she added, would be the £3 million to be spent on our mental services over the next three years.

QUESTION TIME

Geriatric Units

Replying to a question, Mr. IAIN MACLEOD said that there were now 59 geriatric units for active treatment. These accounted for 20,500 of the total of 53,871 beds normally available for the chronic sick. He had no separate information as to the number of patients treated annually in these units, but in the year ended Dec. 31, 1953, 101,081 patients were treated in beds allocated to the chronic sick.

Undernourishment of Infants

Mrs. JEAN MANN asked the Minister of Health if he was aware that medical officers had expressed concern regarding undernourishment of infants fed on National dried milk,

* An additional allowance of £50, within a maximum of £2850, will continue to be paid to non-medical staffs of London University.

due to the inadequate feed amounts prescribed on the tins; and if he would see that the prescribed amounts were altered so as to bring them up to the requirements of the British *babies of today.*—Mr. MACLEOD *replied*: I am aware of the recent study on artificial feeding of infants in Aberdeen [1] and, with the Minister of Food and Secretary of State for Scotland, *I am considering the results. But it should be realised that* the feeding-tables issued with National dried milk are designed only to guide the mother until she can consult a doctor or clinic, *as she is expressly advised to do before starting* artificial feeding, or if the baby is not thriving.

N.H.S. Specialists

In reply to a question asking the number of full and part time specialists serving in the National Health Service Mr. MACLEOD gave the following figures:

—	Dec. 31, 1952	December, 1953	March 31, 1954*
Consultants:			
Number employed whole-time	1704	1728	1762
Total hours worked weekly by part-time consultants	106,000	109,889	112,003
Senior hospital medical and dental officers:			
Number employed whole-time	964	1167	1199
Total hours worked weekly by part-time staff	17,000	16,054	16,078

* These figures are derived from limited returns made by the employing boards.

In answer to a question Mr. MACLEOD gave the following figures for consultants in the four Metropolitan regions:

—	1952	1953	1954
Whole-time consultants	701	713	707
Maximum-part-time consultants	741	769	769
Other part-time consultants	660	628	624

G.P.s in the N.H.S.

Mr. G. R. MITCHISON asked the Minister how many doctors were serving in the National Health Service, respectively, as trainee-assistants, as assistants, and otherwise as general practitioners.—Mr. MACLEOD replied: The most nearly comparable figures available for England and Wales are as follows:

—	Trainees	Assistants	Principals
July 1, 1952	369	1689	18,164
July 1, 1953	297	1596	18,908
Jan. 1, 1954	289	1628	19,144

Merit Awards

Replying to a question, Mr. MACLEOD said that 9 people not medically qualified were in receipt of distinction or merit awards in connection with the National Health Service in England and Wales. All held dental qualifications.

Recruitment of Mental-hospital Staff

Replying to a question, Sir WALTER MONCKTON, Minister of Labour, said that since April this year special efforts had been made to improve recruitment of mental-hospital staff by local campaigns. Statistics were not yet available to show how much these campaigns had achieved, but immediate results did not appear to have been very substantial, and the problem remained serious. He looked for an improvement when the publicity campaigns had had time to produce their effect.

Hares and Myxomatosis

Replying to a question, Mr. HEATHCOAT AMORY, Minister of Agriculture, said that no case of myxomatosis had been confirmed in hares in Great Britain, but he understood that the disease had been confirmed in three brown hares in France.

1. Hytten, F. E., MacQueen, I. A. G. *Lancet*, Oct. 23, 1954, p. 836.

In England Now

A Running Commentary by Peripatetic Correspondents

Nov. 12 is Dr. Sun-Yat-Sen's birthday, and where I am now living it is celebrated as one of the public holidays that relieve the round of the Chinese seven-day week. In the afternoon the local doctors gathered in *strength at the city hall to play* their part in the celebrations. Though there are several uniformed and imposing consultants in the capital, I am the sole *unworthy representative of Western Medicine; so, I* was placed in solitary state in the front row, while the society's president sat with the mayor and the president of the People's Party on one side. *The president led the* chant which opens most official sessions, and the prayers *as he stood before* Dr. Sun's portrait. My Taiwanese "counterpart," who interprets, shops, and drives for me, had slipped into the next chair to tell me that I *was expected to give an address on the British health* service. I followed the official speakers, and spoke most briefly, interlarding my account of the last six years with what I could remember about Dr. Sun's adventures in London. After the presentation of scrolls to three doctors with more than 40 years' service in the community, a forensic expert gave some advice on what to do when threatened with litigation—as common, it seems, *in Formosa as in England. Then we all adjourned to* the garden of an obstetrician whom I had previously met. I had thought that the "garden-party" on the invitation would be a misnomer for me. There were a few wives, but they were kept firmly out of hearing and only just in sight. It was about 5 P.M.; so I began with bananas, peanuts, and a little rice wine; but that was not to be for long. The garden had little grass and few flowers, but a pond with goldfish twisted among the trees and at the back grew a large banyan. There were two batteries of charcoal stoves, for Japanese and Chinese food. I began with Japanese, but someone brought me Chinese too; and then soon began the series of toasts—designed, I always feel, to see how much this foreigner can hold. Then the egrets came, like white arrows against the darkening sky, till the banyan was filled with their whiteness as they argued and jostled for the best positions. People began to move, and I went indoors with our host to listen to one of the doctors playing the Chinese harp and to drink tea. The children slipped away from their mothers and came in through the windows and doors; for all the screens had been removed. When the playing stopped, you could hear the grumbles of the egrets in the dusk.

* * *

I do not think I ever carried a bucket of coal until we were married. My Oriental status as the Lord and Master of the household would have lasted much longer than that if my mother-in-law had not come to stay. She had the unshakeable conviction that women who carried coal buckets invariably twisted their innards into some weird knots that inhibited procreation. She brushed aside my professional opinion that it strengthened the pelvic floor; she had set her mind on being a grandmother. I spat on my lily-white hands and reported for duty below. Many a bag of fine gold has passed between the evasive breadwinner and a regiment of hewers of wood and drawers of water, professional pelvic-twisters, with gnarled bucket-clutching fingers, and an unfailing repertoire of local gossip. Still a gap remained. Fifteen years of Sundays, fourteen hols with pay, six weeks when their legs were bad, and two that went astray.

The shades of my mother-in-law bound me to the crackling scrunch of anthracite and the choking dust of slack. As a ruthlessly efficient fuel-overseer she watched me from Valhalla. But fifteen years of bondage have never eased my shame. I have slunk around the corner in the half-light of dawn or dusk and pretended to the neighbourhood that a well-ordered household lay behind my façade of professional dignity. At least until last Monday. Our obliger failed to come at 8; my wife was horribly bilious and decided to stay in bed. I scraped the nucleus of three scrambled eggs from the russet cortex of a saucepan, fed the kids, and shoo'd

them off to school. Just time for my Boy Scout act *with the coal buckets before I started the day's round.* I spun around the corner in my smooth crepe soles. The flagstones in the yard were wet. The buckets flew singing past my ear.

I sat there in the rain, looking down at the shaft of my left radius poking up the skin. Unmasked at last; a bitter thought. I could hide the truth no longer. My colleague came and slabbed me up in welcome plaster, *the familiar doors swung open at the hospital.* "*He* did it carrying coal buckets!" echoed the whispers through the dark-room and the stairs up to the ward. *A cruel twist of irony put me in the theatre on the end of* the gynæ list. The soothing dreams of 'Pentothal' glided into the grip of wet plaster and the hum of conversation. "How nice to meet another man who has to carry coals!" I recognised the heart-cry of an *Orthopod. I doodled under the electric cradle all the* afternoon, chatting to the rest of the medical staff as they popped their heads around the door. I never knew *so many of us were slaves of the bucket. At 10 o'clock* that night old George rang up to suggest that we found a Husbands' Anti-Housework League. The virgin whiteness of my plaster has been raised aloft as a banner for the slaves of the drooping scapulæ, a rallying-point *for our emancipation.*

* * *

I sat down at the table, waited—and hoped—in expectancy. My examiner sat back in his chair and, grasping his lapel firmly with one hand, said:

"*I have a headache, Doctor.*"

I was nonplussed. This was different from the "How-do-you-treat-so-and-so" approach.

"Well—er, Sir, how long have you had it?"
"*Thirty years!*"
"When does it come on, Sir?"
"In the morning and wears off during the day."

So far so good. But I had ten minutes to fill, so I played for time by asking further questions.

"Anything else trouble you, Sir?"
"Yes, I'm sick in the mornings."

Silence. My mind became blank.

"Come on, lad, have you drawn no conclusions?"
"Well, Sir, the *history* is too long for a cerebral tumour and—er—meningitis."

I looked at him hopefully; he was playing with his spectacles—a clue.

"Eye strain, Sir?"
"Could be. Anything else?"

At this moment the bell rang. Time up. There was a scraping of chairs as candidates rose to go. What else? What else? I racked my brain. All this time he looked at me with a rather devilish smile on his face. I took a chance and crossed my fingers. I couldn't think of anything else.

"Well, Sir, it could be—er—chronic alcoholism?"

I don't know if my diagnosis was correct, but at any rate I passed.

* * *

Each year I write to the survivors of our penicillin trials for bacterial endocarditis to see how they are getting along. One of the most faithful of my flock is a woman who has moved away from our district. This year she wrote that she was doing well. She was sure I would be pleased to know that a few months ago she gave birth to a baby and that both she and the child were flourishing. Indeed she was so satisfied, she said, that she intended visiting a heart specialist to see if she was strong enough to get married.

* * *

Overheard in the surgery
"What's your work?"
"I'm a sheeter-jack."
"What's a sheeter-jack do?"
"No, no. I'm a sheeter. I was calling you Jack."

Letters to the Editor

INTRINSIC FACTOR

SIR,—A preliminary communication, concerned with the isolation of Castle's intrinsic factor, has already appeared in this journal last March.[1] The biological activity was demonstrated by the radioactive vitamin-B_{12} *absorption technique (Heinle et al.,[2] Callender et al.[3]).* Glass[4] has commented that this technique is not sufficient *to demonstrate intrinsic factor activity with certainty.*

We have now carried out clinical trials of the preparation administered orally to patients with pernicious anæmia in relapse, and have obtained clear evidence of clinical activity in a single dose of 40 mg. (one case), and *in doses of 4 mg. per day for ten days (two cases). In* both these patients there was a satisfactory reticulo*cytosis, and the rise in hæmoglobin, erythrocyte-count,* and hæmatocrit continued for over twenty-five days. Slight but definite effects were observed with a dosage of 1 mg. per day for ten days (two cases). A single dose of 20 mg. (two cases) also gave clinical responses but these *were not nearly so marked as with the single dose of 40* mg. One patient who developed pernicious anæmia after a total gastrectomy showed no response to a daily dosage of 1 mg. When given as a single dose the material was given together with 50 μg. vitamin B_{12}, and the daily *doses were given together with 5 μg.*

These cases will be reported elsewhere in greater detail.

Departments of Medicine and Pathology,
King's College, University of Durham, and Royal Victoria Infirmary, Newcastle upon Tyne.
R. B. THOMPSON
A. L. LATNER.

HÆMOPHILIA

SIR,—*It has been suggested that patients suffering* from hæmophilia would find it helpful to carry with them at all times an explanatory card, so as to ensure that any practitioner called upon to treat them in an emergency would be made aware of their clotting defect and would not inadvertently embark on operations or other procedures which might, without preparation, have unfortunate results.

In recent years advances have been made in the diagnosis of hæmophilia, and refined tests have been introduced to distinguish this disease from other clotting disorders which, although clinically similar, require different treatment. It is therefore, increasingly important that the diagnosis should be conclusively proved before a patient's clotting defect is ascribed to hæmophilia.

With these objects in mind, the Medical Research Council have joined with the Ministry of Health and the Department of Health for Scotland in preparing a card for issue to hæmophilic patients. The names of those to whom a card is issued (see next paragraph) will be filed centrally, initially at the offices of the Medical Research Council, and will thus indirectly provide a register which is likely to prove of value not only to the patients but also to research-workers. A number of clinics and laboratories have agreed to act as reference centres for applications to ensure that diagnostic standards are uniform, and hæmatologists in charge of these centres are among those forming the Medical Research Council's Hæmophilia Committee.

Any practitioner who has under his care a patient with hæmophilia, or one of the closely related diseases such as Christmas disease, and who wishes him to have a card, should apply in writing to the nearest reference centre, enclosing full clinical and hæmatological findings. (A

1. Latner, A. L., Merrills, R. A., Raine, L. *Lancet*, 1954, i, 497.
2. Heinle, R. W., Welch, A. D., Scharf, V., Meacham, G. C., Prusoff, W. H. *Trans. Ass. Amer. Phycns.* 1952, **65**, 214.
3. Callender, S. T. E., Turnbull, A., Wakisaka, G. *Brit. med. J.* 1954, i, 10.
4. Glass, G. B. J. *Lancet*, 1954, i, 1082.

preliminary list of reference centres is given below.) If the centre considers the evidence is not quite complete, it may request the practitioner to ask the patient to come for further investigation, preferably as an outpatient. The centre will inform the Medical Research Council of all proved cases of the disease and will issue the hæmophilia card to patients through their practitioner.

The card contains a statement that the bearer has hæmophilia and is under the supervision of a named physician and hospital. It goes on to say, "In case of injury, bleeding or serious illness this person may have special need of hospital care. The hospital named above or the nearest appropriate clinic should be able to advise on or facilitate admission if informed at once by telephone." The card also contains information about transfusion, blood-grouping, and abnormal antibodies.

It is believed that, besides safeguarding the hæmophilic patient himself and aiding research, the card will be of real value to practitioners called upon to deal with these rare and difficult cases in emergency. Those responsible for the care of any such patients, adult or child, are therefore asked to bring the existence of these cards to the notice of the patient or his parents and to encourage them to permit application to be made for a card.

H. P. HIMSWORTH
Secretary,
Medical Research Council.

The following is a preliminary list of reference centres for hæmophilic patients. It is hoped to add other centres shortly.

Aberdeen	Prof. H. W. Fullerton, F.R.C.P., The Department of Medicine, Foresterhill, Aberdeen.
Birmingham	M. J. Meynell, M.R.C.P., The United Birmingham Hospitals, The General Hospital, Birmingham, 4.
Bristol	Department of Medicine, The Royal Infirmary, Bristol.
Cambridge	F. G. J. Hayhoe, M.D., Hæmatology Clinic, Department of Medicine, Tennis Court Road, Cambridge.
Cardiff	Prof. H. Scarborough, F.R.C.P.E., Medical Unit Royal Infirmary, Cardiff.
Dundee	Prof. R. B. Hunter, M.B.E., F.R.C.P.E., Department of Pharmacology and Therapeutics, Medical School, Queen's College, Dundee.
Edinburgh	Prof. L. S. P. Davidson, F.R.C.P., Department of Medicine, The University New Buildings, Edinburgh.
Exeter	J. O. P. Edgcumbe, M.D., Department of Pathology, Royal Devon and Exeter Hospital, Exeter.
Glasgow	Prof. L. J. Davis, F.R.C.P., Department of Medicine, Royal Infirmary, Glasgow.
London	J. V. Dacie, M.R.C.P., Postgraduate Medical School of London, Ducane Road, London, W.12.
Manchester	J. F. Wilkinson, F.R.C.P., Department of Hæmatology, The Royal Infirmary, Manchester, 13.
Newcastle upon Tyne	C. C. Ungley, F.R.C.P., Royal Victoria Infirmary, Queen Victoria Road, Newcastle upon Tyne, 1.
Oxford	R. G. Macfarlane, M.D., The United Oxford Hospitals, The Radcliffe Infirmary, Oxford.
Sheffield	E. K. Blackburn, F.R.F.P.S., The United Sheffield Hospitals, Department of Hæmatology, The Royal Infirmary, Sheffield, 6.

ARTIFICIAL FEEDING OF INFANTS

SIR,—The interesting paper by Dr. Hytten and Dr. MacQueen (Oct. 23) on the calorie intake of infants fed on National dried milk raises a point which we believe to be of some importance. This concerns the intake of vitamin D in infants fed on this and similar milks. Both the full-cream and half-cream varieties of National dried milk contain not less than 280 international units (I.U.) of vitamin D per ounce of powdered milk. A two-month-old infant fed according to the instructions on the full-cream tin will thus receive about 700 I.U. of vitamin D daily, which is the amount generally accepted in this country as adequate to ensure normal growth and to prevent rickets in the full-term infant.[1] If, in addition, the child is being given the Ministry of Food cod-liver-oil compound in the recommended daily dose of 1 teaspoonful, the intake of vitamin is doubled, amounting to 1400–1500 I.U. daily. Professor Jeans and Dr. Stearns have shown that 300–400 I.U. daily is an effective prophylactic dose and that when the daily intake rises to 1800 I.U. or more daily anorexia, loss of weight and failure of linear growth may occur.[2 3] These were considered to be mild manifestations of hypervitaminosis D. Largely as a result of their work fresh or reconstituted milk in the U.S.A. can only be fortified with vitamin D to a level of 400 I.U. per quart (personal communication from Dr. Stearns).

It is possible that the syndrome of idiopathic hypercalcæmia of infants with failure to thrive [4] may be related to a more than adequate amount of dietary vitamin D [5] and that individual sensitivity to this vitamin may be of importance in the ætiology.[6] In this connection it is of interest that, so far as we are aware, all the reported cases of this particular syndrome have occurred in Great Britain and Northern Ireland where the use of vitamin-D supplements and fortified milks and cereals is common practice.

In our opinion full-term infants who are adequately fed from a calorie point of view on National dried or similar milk are ensured of a sufficiency, and perhaps an excess, of vitamin D and do not require supplementary amounts of the vitamin. This probably also applies to the premature infant where the increased tendency to develop rickets is due to a deficiency of calcium and phosphorus rather than to an increased need for vitamin D.[7]

This matter has been the subject of letters in your columns by Dr. Ball and Mr. Woodcock (July 31), and the time would now seem opportune for a reconsideration of the optimum vitamin-D intake in infancy and in particular the policy regarding vitamin fortification of infant foods. The present tendency for a too-liberal prophylactic therapy seems unphysiological and wasteful.

The Royal Belfast Hospital for Sick Children, Belfast.
R. D. G. CREERY
D. W. NEILL.

1. British Pædiatric Association. Report of sub-committee on Vitamin D. See *Arch. Dis. Childh.* 1943, **28**, 58.

2. Jeans, P. C., Stearns, G. *J. Pediat.* 1938, **13**, 730.
3. Jeans, P. C. *J. Amer. med. Ass.* 1950, **143**, 178.
4. Lightwood, R. C. *Proc. R. Soc. Med.* 1952, **45**, 401.
5. Creery, R. D. G., Neill, D. W. *Lancet*, July 17. 1954, p. 110.
6. Lightwood, R. C. *Arch. franç. Pédiat.* 1953, **10**, 190.
7. Glaser, K., Parmalee, A. H., Hoffman, W. S. *Amer. J. Dis. Child.* 1949, **77**, 1.

ADOPTION OF CHILDREN

SIR,—As chairman of an adoption society I agree entirely that a child should always be told that he is adopted. But I do not think that this can be insured by requiring the prospective adopters to give an undertaking to do so, as is recommended by the Departmental Committee on the Adoption of Children. It would be virtually impossible to enforce such an undertaking or to provide suitable penalties for failure to carry it out.

The way would rather be to convince adopters of the necessity of this course and help them to carry it out. In adoptions arranged by an adoption society this should be done by the case-worker. It should also be the duty of the guardian-ad-litem to satisfy herself as far as possible as to their ideas and intentions on this matter. A suitably expressed recommendation from the chairman of the bench at the time the order is made will serve to stress its importance.

It is essential to tell the child because sooner or later it is well nigh inevitable that he will find out—from neighbours or school-mates, or from his birth certificate, which will reveal the fact of adoption. If the knowledge comes in one or other of these ways it will probably cause a severe emotional shock and undermine confidence in the parents. It might be more disastrous still if the knowledge came after their death.

The case described by a correspondent in your issue of Nov. 20 may be exceptional but I still wonder if he

is right. In telling a child that he is adopted it can be made clear that he is as much a member of the family as if he had been born to his adopted parents, which is indeed the legal position.

Newark, Notts. MARY S. A. COLLIS.

DIAGNOSTIC USES OF UROPEPSINOGEN

SIR,—On reading your annotation of Nov. 13, I was surprised to see no reference to the use of uropepsinogen in the management of macrocytic anæmias. Mention has been made of its relation to such anæmias[1–3] and a similar type of test has been described.[4] I have found the following simple qualitative test for urinary proteolytic-enzyme activity to be useful in practice.

A small fresh sample (approximately 20 ml.) of the patient's first morning specimen of urine is acidified with concentrated HCl dropped in with a pipette until the reaction of the urine is approximately pH 2·0. The reaction is tested with B.D.H. wide-range indicator paper and adjusted until the full pH-2 red colour is obtained. About half the volume of this filtered acidified urine is poured into a 1 in. boiling-tube, vigorously boiled for one minute, and then cooled under running water. Three $3 \times 1/2$ in. test-tubes are set up in a rack and to one (T) is added 4·0 ml. of the filtered unboiled acidified urine of the patient; to another tube (B) is added 4·0 ml. of the filtered boiled acidified urine; and to the third tube (C) is added 4·0 ml. of unboiled but similarly acidified filtered urine from a normal person. This latter sample is collected as required at any time of the day.

To each of these three tubes are added 1·0 ml. of the substrate mixture. This mixture is prepared by adding an albumin preparation (white of egg, Evans powdered albumin or Armour 30% bovine albumin) to 0·85% w/v aqueous sodium chloride solution in a 1 in. boiling-tube. The mixture is stirred thoroughly and placed in a boiling water bath, continuously stirring. When the mixture has reached a maximal uniformly opaque appearance without flocculation, it is filtered clear of protein flecks and the opacity of a sample is adjusted by the addition of more sodium chloride solution so that it approximately matches a 200 mg. per 100 ml. protein standard-opacity tube. A few drops of egg-white, a small knife-point load of powdered albumin, or 0·3 ml. of the bovine albumin per 20 ml. saline usually results in this degree of opacity. The three tubes of urine and substrate mixture are incubated at 37°C overnight.

The three tubes are then examined for any opacity change after shaking. If egg albumin is used this will flocculate during incubation but if bovine albumin is used this will remain unflocculated and the positive control (tube C) may become water clear unlike those with egg albumin. If the patient's urine contains proteolytic enzyme the tube T will be less opaque than the tube B; if there is no proteolytic enzyme the tubes T and B will show no difference in opacity. The tube C should always show decreased opacity.

This test is simpler than either the quantitative estimation of uropepsin activity using the Folin and Ciocalteau reagent for colorimetric assay[5 6] or the quininium-resin methods for assessing gastric-juice acidity and is simpler and less unpleasant for the patient than a test involving gastric-juice aspiration. Out of 61 patients with addisonian pernicious anæmia I have found only 1 which showed a normal degree of urinary proteolytic activity using this test. A patient with a megaloblastic anæmia of pregnancy showed marked urinary proteolytic activity. On some occasions slight proteolytic activity may be detected with this test in urines from patients with pernicious anæmia. The order of this change is usually only equivalent to a change in standard opacity tubes from 130 mg. to 120 mg. protein per 100 ml., whereas the positive control usually gives a change in the order of 130 mg. to 30 mg. per 100 ml.

Since it seems reasonable to believe that vitamin B_{12} or liver extract will not produce a return of normal gastric secretory activity in pernicious anæmia, and since, in any event, the secretory deficiency may not be constantly absolute,[7 8] I do not believe that it is necessary to undertake tests of such activity as a routine diagnostic measure when pernicious anæmia is suspected. Unhappily, such a test would not very often save a patient showing suspicious macrocytosis from a bone-marrow examination and to inflict a gastric aspiration on the patient as well seems to me rather unnecessary when, if events prove its desirability, the test may be successfully carried out later. However, for those who prefer a test of gastric secretory activity as a routine measure, this simple urinary proteolytic test may be helpful. I have found the test particularly useful when dealing with the recurring problem of the patient who has been treated with vitamin B_{12} or liver extract before the anæmia has been adequately diagnosed. Under these circumstances, I add to the blood examination three consecutive morning tests of urinary proteolytic activity; if normal proteolytic activity is present I advise the withdrawal of the specific therapy followed by appropriate observation.

King's Mill Hospital;
Sutton-in-Ashfield. A. B. HILL.

STAPHYLOCOCCAL PSEUDOMEMBRANOUS ENTEROCOLITIS

SIR,—We were interested in the paper by Dr. Eirian Williams in your issue of Nov. 13 and by the letter from Dr. Mezey and Dr. Fuld in the same issue. Although it is wise to draw attention to this serious complication of treatment with tetracycline derivatives it should be made clear that the cause of the severe enteritis is not the drug but infection with a particularly virulent strain of staphylococcus.

We have recently had under our care a child of four with severe pseudomembranous enterocolitis who had not received any oral or parenteral treatment with tetracycline drugs. As he recovered from this very severe condition, a brief résumé of his illness may be of interest.

Nine days before admission to this hospital he had been admitted to the skin department of a large general hospital suffering from mild facial impetigo. He received treatment with local applications of a lotion containing aureomycin, but he was not given the drug by mouth nor did he receive any other form of treatment. On the eighth day after admission he developed severe diarrhœa and vomiting and was transferred to this hospital. He was extremely dehydrated and rather drowsy, and the respirations were deep and rather rapid. The facial impetigo had almost healed, only a few scaling areas being left. The stools were watery, green, and very frequent, but no blood or mucus was present. Intravenous therapy was started and, as a provisional diagnosis of salmonella infection was made, he was given chloramphenicol palmitate 625 mg. six hourly.

The diarrhœa continued unabated and despite the administration of 2800 ml. of fluid in the twenty-four hours the dehydration was not corrected. After thirty-six hours he started to vomit large pieces of gastro-intestinal mucosa and as his condition was now critical and a bacteriological diagnosis had not been made, he was given oxytetracycline by intramuscular injection in doses of 80 mg. twelve hourly, the chloramphenicol being discontinued. On the third day after admission he passed strips of mucosa in the stools, which had remained completely fluid but now contained considerable quantities of mucus.

The severity of the diarrhœa was such that it was difficult to maintain satisfactory fluid and electrolyte balance despite careful laboratory control. At one stage the serum-potassium fell as low as 1·4 m.eq per litre. Four days after admission the laboratory reported that *Staphylococcus pyogenes* had been grown from specimens of stool and of vomit and the organism was resistant to all antibiotics except erythromycin. Treatment was then started with this drug by mouth in doses of 100 mg. six hourly and within the next twenty-four hours there was a marked improvement in his condition. The vomiting ceased and the stools were much less frequent

1. Farnsworth, E. B., Speer, E., Alt, H. L. *J. Lab. clin. Med.* 1946, **31**, 1025.
2. Eastcott, H. H. G., Fawcett, J. K., Rob, C. G. *Lancet*, 1953, **i**, 1068.
3. *Brit. J. exp. Path.* 1953, **34**, 596.
4. Olmstead, E. G., Hirschbocck, J. S. *Amer. J. med. Sci.* 1953, **226**, 84.
5. Mirsby, I. A., Block, S., Osher, S., Broh-Kahn, R. H. *J. clin. Invest.* 1948, **27**, 818.
6. Fawcett, J. K. *J. med. Lab. Technol.* 1951, **9**, 170.
7. Bucher, G. R. *Gastroenterology*, 1947, **8**, 627.
8. Watkinson, G., James, A. H. *Clin. Sci.* 1951, **10**, 255.

although remaining rather fluid. By the sixth day it was possible to discontinue intravenous fluids and start oral feeding with a high-calorie low-residue diet. Erythromycin was continued for six days and he made an uneventful recovery. A barium meal and follow-through examination showed no abnormality in the gastro-intestinal tract.

Section of a strip of mucosa that was vomited showed complete necrosis and large clumps of gram-positive cocci throughout the tissue.

A report from the Public Health Laboratory Service stated that the strains of staphylococcus from the vomit and the fæces were of the same phage-type, which was one of the typical food-poisoning strains.

It is quite clear that the enterocolitis was well established before either chloramphenicol or oxytetracycline had been given, and the important point is that the condition can occur without there having been previous oral antibiotic therapy. It is extremely unlikely that the very small amount of aureomycin which had been applied to the skin could have caused any change in the bacterial flora of the bowel.

Alder Hey Children's Hospital, Liverpool, 12.

S. E. KEIDAN
I. F. SUTHERLAND.

THROMBOPHLEBITIS FOLLOWING INTRAVENOUS INFUSIONS

SIR,—Thrombophlebitis following intravenous infusions whether of blood or glucose-saline, is a complication of importance.[1 2] Thrombosis in a vein in the arm causes only temporary pain or discomfort; but thrombosis following infusion into a vein at the ankle is much more serious, since it may affect deep as well as superficial veins, and give rise to permanent venous insufficiency, with œdema and ulceration as probable sequelæ.

Of a series of 1200 cases of chronic ulceration of the leg which I have examined, in 6 (0·5%) the ulcer followed deep thrombophlebitis complicating infusion of glucose-saline (2 cases) or blood (4 cases) into veins at the ankle.

The risk of causing thrombophlebitis with intravenous infusions is well known, but the seriousness of the possible sequelæ of thrombophlebitis in the leg is not generally appreciated. Infusion into ankle veins should never be undertaken lightly.

Leeds. S. T. ANNING.

PATIENTS' DAMAGES

SIR,—An administrative reply in defence of the law was only to be expected, but Mr. Crabb's elucidation (Nov. 13) is really an addendum to the original *Times* article—although I doubt if his parallel to the voluntary hospital system would have found space in those columns. He is, moreover, in error: my task was not to distinguish legal niceties but to aver that ethical rights existed for the patient of equal strength to his present juridical safeguards, and of greater importance to our profession. These were ignored by the *Times*: they do not appear to have ever occurred to Mr. Crabb.

There is little doubt and a real danger that, if the law continues to encroach upon territory which has been our especial province for so long, doctors may tend inevitably to assume a legal as distinct from an ethical attitude of mind. The principles which were evolved of necessity and to safeguard the patient more than for any other reason are thus in danger of becoming nothing more than a withered and meaningless formula.

If anything can be learned from the *Times* article and from Mr. Crabb's letter it is that the law and its administrators can and will recognise only the legal medium. The series of pronouncements since 1951 may be good law, as the law stands, but they often seem to bear little relation to the facts of life, or to the practical applications of an inexact science; and as the precedent and tradition upon which the law depends so heavily are being established anew, it is clearly important to ask by which philosophy our following is to be guided in future—legal or ethical? It is doubtful if there is a choice: there is no doubt that the two are incompatible.

Royal South Hants Hospital, Southampton. P. FARNAN.

NORTH AMERICAN PSYCHIATRY

SIR,—I should be grateful if you would allow me to comment on some of the statements attributed to me in your report of the discussion on trends in North American psychiatry in your issue of Nov. 20 (p. 1056). I appreciate the difficulties of communicating in brief what transpires at such meetings.

The high proportion of trained analysts in academic posts I cited as a symptom and not the cause of the growing influence of psycho-analysis in American psychiatry. I did not quote any exact figure but probably more than half the trained analysts are affected. I traced no direct link between the views of Mead and Benedict and Horney and Sullivan, but said that social scientists on the one hand, and psychiatrists and psycho-analysts on the other, had perhaps made too liberal use of each other's concepts. Finally, it is to scientific problems of a basic kind in physiology, biochemistry, and endocrinology, as well as the social sciences, and not to the latter alone, that I said research in psychiatric institutes tends to gravitate. And there are other than financial reasons for the scarcity of clinical psychiatrists in the field of research.

I attempted to describe broad trends and there were exceptions.

The great University Institute in Montreal where I had the privilege of working and teaching was, in certain ways, unique.

Graylingwell Hospital, Chichester, Sussex. MARTIN ROTH.

RACING AMBULANCES

SIR,—In Newcastle on Nov. 16, the police prosecuted an ambulance driver for dangerous driving. The magistrates let him off. I think that the police were right. The magistrates were also probably right because I suspect that the driver thought that he was also doing right for hurrying a "dying man" to hospital.

The National Ambulance Service have instructed their drivers to keep to the speed limit "temporarily." I suggest that this would be a good time to give permanent and firm instructions to their drivers to drive extremely slowly when carrying seriously ill patients. I do not think it matters if the driver wishes to race to pick up the patient, but the police might. Nothing harms an ill man more than being jolted in a fast-moving ambulance. In general, the more ill the patient the more slowly the ambulance should travel.

Good can come from evil, and war may teach us things we fail to learn without it. Soldiers wounded in battle have often told me that their worst pain was experienced whilst being conveyed at speed in an ambulance to the base hospital. In war-time the best ambulance drivers tend to work in the forward area and they drive their wounded very slowly and carefully. They know that the slower they drive the less pain is suffered by the wounded man, although they themselves may run greater risks from flying shrapnel.

I remember travelling in an ambulance over the Apennines in the snow with a soldier whom I had treated some time previously for a gunshot wound of the colon. I had been given special permission to remain behind with him and one British orderly when my unit went back to refit. When I considered that my patient was fit to travel to the base hospital, I went with him. The patient was very tired on arrival, and whilst he was being carried up the steps into the hospital he beckoned to me. I

1. James, J. D. *Lancet*, Oct. 16, 1954, p. 767.
2. Jones, P. F. *Ibid*, Nov. 6, 1954, p. 970.

asked him if he was all right, and in a very quiet voice he said, "Fine, but please can I see the driver." When the driver appeared the patient shook his hand and said, "Thank you for driving so slowly."

Leeds. MICHAEL C. OLDFIELD.

**The law on the driving of ambulances is discussed on p. 1120.—ED. L.

HÆMOLYTIC TRANSFUSION REACTIONS

SIR,—I read with great interest Dr. Discombe's paper of Nov. 6. There are, however, certain comments I would like to make, having had the privilege of contributing to the section on the treatment of incompatible transfusion in *Disorders of the Blood* (7th edition) by Whitby and Britton.

(1) Although Dr. Discombe tends to minimise the rôle of the laboratory in the production of gross hæmolytic reactions, it is apparent in most of the published series that a relatively large number of instances have been caused by error in ABO and rhesus grouping and matching. In his series of 14 cases, no less than 10 were due to mistakes by the pathologist or clinician, 6 of these being accounted for by laboratory or technical error. The three commonest factors in the production of major transfusion reactions are: (*a*) giving the wrong blood; (*b*) errors in grouping technique or interpretation of results; (*c*) deterioration of blood due to physical or bacteriological factors. These may be the result of inefficient storage, overheating, freezing, the use of infected blood, or blood used after the date of expiry—i.e., four weeks from the date of donation. Most of these factors involve the human element and are largely preventable; human errors account for more severe reactions than do undetected antibodies. In an attempt to diminish these disasters, I would suggest that blood be considered in the same light as a dangerous drug and be administered subject to similar regulations. It should not be given unless *real* indications are present, there should be no evidence of deterioration before use, it should not be warmed prior to injection, the labels should include full christian names and age of the patient for whom it has been matched, and there should be a book kept on the wards whereby each bottle could be recorded and doubly checked by a senior member of the nursing staff.

(2) In my own series of cases, there is also a high incidence of oliguria developing without a preceding "grand mal" transfusion reaction, and I agree that a minimal reaction may be followed by severe renal damage. When a typical severe reaction does occur, the most significant symptoms which may herald impending renal failure are pain in the loins and flushing of the face. I have had a patient who received some 1500 ml. of incompatible blood with no reaction, no subsequent renal damage and merely the gradual development of a hæmolytic jaundice after twenty-four hours.

Amongst my own patients, no major reaction occurred in those who were given an incompatible transfusion when in coma or under anæsthesia. This group of patients tends to develop a classical picture which is distinct from that produced in the conscious patient. In this connection I would stress the double hazard of giving blood and anæsthesia to the surgical patient. The preoperative period is the optimal time for correction of a red-cell deficiency when dehydration and electrolyte deficits should also be corrected. The preoperative transfusion may be followed by a plasma substitute while the patient is in theatre.

(3) I was most interested in Dr. Discombe's hypothesis of an allergic reaction being the trigger mechanism in the hæmolytic reaction. For the past few years I have used a relatively large dose of an anti-histamine compound given as a routine two hours before the blood-transfusion is due to begin, with a consequent marked reduction in the incidence of allergic phenomena. This reduction is particularly impressive when using fresh whole blood, which produces a higher incidence of allergic reactions than does stored blood.

(4) It is now universally agreed that the most lethal procedure to adopt in the treatment of an established acute renal failure is the administration of isotonic sodium sulphate or sodium lactate. It completely fails to produce a secretion of urine, and leads directly to overhydration, alkalosis, and pulmonary œdema. Although preliminary alkalinisation prior to transfusion has its advocates, acute renal failure has occurred in the presence of an alkaline urine. The place of alkalis is limited to the correction of a gross acidosis. The maintenance of fluid balance is of far greater importance than the introduction of fluids to correct a moderate acidosis developing during the oliguric phase. Usually there is no significant disturbance of plasma-sodium in the first two weeks of anuria in the absence of diarrhœa, vomiting, the previous administration of large volumes of saline or sodium sulphate, or the over-enthusiastic treatment of acidosis.

In an established oliguria with a normal blood-pressure no measure can reverse the epithelial damage. It is possible that where intravascular hæmolysis has occurred, renal damage may be minimised if a diuresis is achieved at the onset by a paravertebral block, intravenous procaïne, or other means. The most effective diuretic is isotonic sodium sulphate, and I personally have seen no dire results directly attributable to 500 ml., or never more than 1 litre, given to the patient within twelve hours of the time of the reaction. In patients showing hypotension and circulatory collapse, the prime factor is to treat the state of shock and reduce the renal ischæmia by compatible whole blood and pressor drugs. Shock and hypotension have a direct relationship to the extent of renal damage. It should be remembered that commonly a state of hypotension follows the termination of a noradrenaline drip.

Unfortunately it is true that there still exists a deep-rooted association between oliguria and the administration of sodium sulphate. One of the commoner clinical problems is the diagnosis of the cause of a diminished urinary output following an operation and a blood-transfusion, whether or not it is accompanied by a transfusion reaction. Usually the diagnosis is a pre-renal oliguria, and this is confirmed if a balance chart reveals that an increased insensible loss, a diminished intake over the previous twenty-four to forty-eight hours, vomiting, or diarrhœa have occurred. I think it is probable that the successful use of sodium sulphate has in the past been associated with a pre-renal rather than an intrinsic renal cause.

London, W.5. LYNN A. J. EVANS.

NORADRENALINE AND ESSENTIAL HYPERTENSION

SIR,—Dr. Menof, in his article of Nov. 13 (p. 996), bases his conclusion that essential hypertension is produced by excessive secretion of noradrenaline on very indirect evidence. Barnett et al.,[1] whose paper he quotes, reached exactly opposite conclusions, finding that noradrenaline infusions and phæochromocytoma could be distinguished from essential hypertension by a reduction in hand and forearm blood-flow and, frequently, by pallor of the skin and bradycardia. Numerous observations by von Euler[2] and others on the excretion of adrenaline and noradrenaline in the urine have further disproved Dr. Menof's hypothesis.

The clinical resemblance between some cases of phæochromocytoma with sustained hypertension and

1. Barnett, A. J., Blacket, R. B., Depoorter, A. E., Sanderson, P. H., Wilson, G. M. *Clin. Sci.* 1950, **9**, 151.
2. Engel, A., von Euler, U. S. *Lancet*, 1950, ii, 387.

cases of essential hypertension is close. In such cases, however, hypertension may persist after removal of the tumour,[3] despite the return of the level of urinary pressor amines to normal. It seems most probable that hypertension due to the secretions of the tumour may itself initiate another, and usually irreversible, hypertensive mechanism which may be identical with that in essential hypertension. These facts could not be explained by assuming that excessive noradrenaline secretion is the cause of essential hypertension.

London, W.1. J. W. LITCHFIELD.

AGAMMAGLOBULINÆMIA

SIR,—Dr. Bowley and Mr. Dunsford, in their letter of Nov. 13, express their doubt as to the blood-group of the patient described in the paper by Dr. Grant and Dr. Wallace (Oct. 2). As Dr. Grant and Dr. Wallace were so kind as to allow me to perform the serological investigations and used part of my report to them in their paper, I feel that I should make a few comments on the letter by Dr. Bowley and Mr. Dunsford.

To save space, the authors quoted only a very brief part of my report and omitted what, in the eyes of hæmatoserologists, would appear to be important findings. Their main purpose, however, was to give a succinct description of a highly intriguing clinical picture and to draw the attention of clinicians and pathologists to this condition which is probably more frequent than had been recognised in the past.

I was grieved to note that Dr. Bowley and Mr. Dunsford could have entertained the idea that so primitive precautions for the determination of a blood-group as they suggest might have been omitted in a blood-transfusion laboratory. Surely these are pitfalls well-known to any hæmatoserologist and it has been the practice for many years in my laboratory to use group-O serum routinely in the investigation of all samples submitted here. This investigation was not, of course, omitted in the case reported by Dr. Grant and Dr. Wallace, and to put the minds of Dr. Bowley and Mr. Dunsford at rest, I would like to mention that the cells of this patient were repeatedly investigated with a number of α, β, and at least five different $\beta\alpha$ (group O) sera. One of the latter contained a potent immune α. The investigation was performed at 4°C and 18°C and no agglutination was seen with any antiserum used on the cells. Absorption experiments were also performed using the patient's cells and group-O and group-A cells as controls. They showed clearly that α was not taken up by the patient's cells as the titre of the antiserum was found to be the same as the one found after the serum had been "absorbed" with group-O cells and was unchanged.

Dr. Bowley and Mr. Dunsford seem to want to have it both ways. They seem to assume that the patient's group was really A_4 (or Ax, whatever one likes to call these subgroups), and they gloss over the fact that if this was really the case, one would have expected the serum of the patient to contain an antibody acting on all group-A cells, as many writers, amongst them Mr. Dunsford, have found. In a lecture given in Holland Mr. Dunsford suggested: "The sera of the same type [A_4] have always been found to agglutinate A_1, A_2 and B cells at 20°C but not to react with group O cells." Again, to put the writers' minds at rest, I would like to say that exhaustive tests for the presence of an anti-A were performed using A_1, A_2, and A_3 cells. On only one occasion did we find a very weak reaction with an A_1 cell at room-temperature, the "agglutinates" consisting of two to three cells and being completely broken up by a very gentle rocking of the slide. As the absence of an anti-A was the remarkable finding after the group of the patient had been determined to our full satisfaction, of course, a great number of investigations were performed giving always the same result.

The sentence "... it is surely surprising that the anti-B agglutinins are unaffected." makes strange reading. Surely, science has still many surprises in store for all of us and it is my conviction that it is the first duty of a scientist to record his findings truthfully, even if they should surprise some of his colleagues. I am sure that Dr. Bowley and Mr. Dunsford will be still more surprised to learn that two further cases of agammaglobulinæmia are at present under observation who show the same type of behaviour. They will shortly be published by Dr. W. T. Cooke, who has kindly agreed to my mentioning these cases in this letter. One case is group O (tested with group-O sera!) and has α and no β (another surprise!). The other case is group A but lacks the β agglutinin. It is perhaps worth mentioning that this latter case was discovered when a specimen was routinely investigated for its blood-group. These cases constitute real exceptions to Landsteiner's rule.

I too am surprised at their dogmatic statement that "... such persons ... do not produce A substance in their saliva." I was not able to find any literature supporting this statement but we have (unpublished observation) investigated a patient whose blood-group satisfies all the criteria for an A_4 but whose saliva contains group-A substance.

Birmingham. W. WEINER.

3. Hamilton, M., Litchfield, J. W., Peart, W. S., Sowry, G. S. C., *Brit. Heart J.* 1953, **15**, 241.

FLORENCE NIGHTINGALE BIBLIOGRAPHY

SIR,—I have been entrusted by the Florence Nightingale International Foundation with the compilation of a bibliography of the published writings of Florence Nightingale, together with a calendar of all her extant manuscripts and letters.

I should be grateful if owners or custodians of any manuscripts or letters of Miss Nightingale would communicate with me with a view to the inclusion of their material in the forthcoming book. If it is possible to send the actual documents, these will be examined and returned without delay. In view of the large number of letters to be dealt with it is not proposed to copy them, but to compile a location list with a brief indication of the subject of each letter.

The Wellcome Historical Medical Library,
183, Euston Road,
London, N.W.1. W. J. BISHOP.

EFFECTS OF CORTISONE AND CORTICOTROPHIN ON THE ADRENAL CORTEX

SIR,—The article by Dr. Stoner and Dr. Whiteley, in your issue of Nov. 13, prompts us to add three further cases of patients who died during treatment with steroid hormones and whose adrenals were examined at necropsy.

A woman, aged 64, had suffered from rheumatoid arthritis for three years. She was treated with cortisone 25 mg. q.d.s. for ten months, and then corticotrophin gel 80 mg. was given daily for two months. She died from cardiac failure and pneumonia, the corticotrophin having been stopped three days before death. Section of the adrenals revealed that the cortical cells, especially the cells of the zona fasciculata, showed lipoid infiltration to an unusual degree—i.e., they were in the resting phase.

A woman, aged 61, who had suffered from rheumatoid arthritis for twenty years, had been treated with aqueous corticotrophin (20 mg. q.d.s.) for one month when she developed pneumonia and died. Section of the adrenals showed that the cortical cells were depleted of lipoid granules—i.e., they were in an active phase.

A man, aged 53, who had suffered from rheumatoid arthritis for thirteen years and had been treated with cortisone for two months, died following pneumonia. Section of the adrenals showed degenerative changes in the cells of all three zones of the cortex with loss of nuclear staining and sometimes complete dissolution of the cell; the whole cortex was reduced in width and, in one adrenal, hæmorrhage had occurred into the cortex and peri-adrenal tissues.

The histological picture of the adrenals may be correlated with the hormone therapy received, and it agrees with the findings of Dr. Stoner and Dr. Whiteley. It is interesting to note that in the first case, where the corticotrophin was stopped three days before death, the cells of the adrenal cortex already showed marked lipoid infiltration.

It is intended to publish the full clinical details of these three patients.

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ERNEST FLETCHER
F. CLIFFORD ROSE.

CHILD WELFARE: PHYSICAL AND MENTAL

SIR,—Your leader of Nov. 13, and Dr. Symonds's article in the same issue, will be welcomed by many child-guidance clinic workers who have long felt that their task could not fully be carried out without extension into the child-welfare clinics. Some more progressive authorities have accepted in principle the need for this extension, but almost always it proves impracticable to carry out because of the grave shortage of trained personnel; and in particular because that key figure in this rôle, the experienced psychiatric social worker, is usually already carrying far too heavy a case-load in her other clinical duties. Since the recruitment of an adequate number of psychiatric social workers is bound up with problems of their status, salary, and training, this shortage is likely to last a long time. Might it not be more valuable to concentrate such personnel as are available into a training, as well as a purely clinical, rôle?

For some years past the syllabus for health visitors in training at Nottingham University has included 18 lecture-discussions conducted by a children's psychiatrist. This experience has convinced us that there is here a marked latent interest in, and desire for, teaching in the dynamics of human behaviour, the normal emotional patterns of childhood, and the basic techniques of case-work; nor have this interest and desire been catered for in the previous nursing training of most of the students. Contact with the established and qualified health visitor has been more limited, but where, as in the area of the Nottinghamshire Health Authority, some discussion groups between health visitors and the child-guidance team have been held, the same basic need and desire for help in this sphere has been apparent. In our experience the problem is not so much a lack of interest on the part of the workers in child-welfare clinics, as a lack of the opportunity to learn.

The child-welfare clinic is potentially a most important part of any preventive mental-health service, but it can only function adequately in this rôle if its workers are given the necessary knowledge, experience, and understanding of the problems involved, both in their basic training and by working in close contact, and in their own clinics, with an experienced child-guidance team.

Nottingham. T. A. RATCLIFFE.

SIR,—In your issue of Oct. 30 (p. 915) you raise the question of the abolition of infant-welfare centres. The child-welfare movement is virtually 50 years old and has done valuable work in the field of preventive medicine by improving the antenatal health of the mother, reducing the maternal and infant mortality-rate, building up the health of the pre-school child, discovering physical diseases which might otherwise have lain dormant until too late, and reducing the incidence of infectious diseases by active immunisation.

In the 1920s most general practitioners in the large industrial or colliery practices were so overwhelmed with large surgeries, unending certificate-writing, maternity cases night and day (without the present-day antenatal examinations or specialist help at the time of labour), and minor surgery (circumcisions, tonsils and adenoids, and so on) in the home, that the infant and pre-school child were never seen except when ill, and the rôle of the G.P. was then curative and not preventive.

In such circumstances the opening of child-welfare centres to deal with the child population was a veritable godsend. It took nothing from the G.P. but saved him many a night call by timely warning from the medical officer of the centre, or even prevented his being called by some simple advice to an overstrung young mother.

Times have changed, but the child-welfare centres have still much to do. They have not outworn their function as Professor Banks thinks.[1] They ought not to do so, as Dr. George and his colleagues suggest,[2] but it is more likely that Dr. Essex-Cater [3] is right when he says that they still have a part to play. Actually a great field as yet almost untouched awaits to be opened up and the organisation provided by the child-welfare service is ideal for the purpose. This field lies in the domain of psychiatry.

(1) Psycho-analysts have postulated that the roots of mental illness lie in wrong handling of the emotional needs of the infant. There should therefore be a psychiatric session in the child-welfare centre to which the health visitor can refer emotionally disturbed mothers, infants, and toddlers.

(2) Experts trace delinquency back to bad home conditions, unwanted and unloved children, wrong relationships between parents. Marriage-guidance counselling, although at present ably carried out by the personnel of the Marriage Guidance Council, should perhaps not be divorced from child care but might very profitably be part of the child-welfare service.

(3) In regard to mental deficiency, in the child-welfare clinic we have the earliest opportunity of diagnosing the defective child, and therefore of instituting measures for the earliest possible care and training; also antenatal histories of mothers of defective children are invaluable for research purposes into the causes of mental deficiency. It is, therefore, almost imperative that a specialist in mental deficiency should hold a regular session in the child-welfare centre in order to cover these two important matters, if we are going to make progress in diagnosis, prevention, and early training.

Dr. Symonds's article in your issue of Nov. 13 illustrates the advantageous use of psychiatric advice in the milieu of the child-welfare clinic; and your leader on child mental welfare, referring to the report on preventive mental health in the maternity and child-welfare service, reminds us of the extreme urgency of tackling preventive work in the mental as well as in the physical field. I feel, however, that a still wider orientation is required, and that both parents need help so that the atmosphere of the whole family unit may be improved; also that much preventive work may be possible in mental deficiency in the child-welfare centre and its associated antenatal service.

Another important contribution from the child-welfare service to the community is the large body of excellently trained health visitors. One at least in each centre could specialise in mental and mental-deficiency work and would be invaluable to the public in visiting the homes, and advising and supporting the mother to cope with and hold the defective child, and otherwise in helping to improve the home conditions. Social workers in these fields are very few and lack the nursing knowledge and experience with which health visitors are equipped. In this connection, the article, Practitioner and Health Visitor, in your issue of Nov. 13 (p. 1015) is very apt. You mention how "Thomas has expressed his firm belief in health visiting as one of the most important factors in helping the doctor of the future to maintain his personal contact with his patients": and that Miss Whitehouse suggests that the general practitioner might, with great benefit, use the health visitor as his almoner. Certainly the health visitor has great influence in the

1. Banks, A. L. *Brit. med. J.* 1952. ii, 1007.
2. George, J. T. A., Lowe, C. R., McKeown, T. *Lancet*, 1953, i, 88.
3. Essex-Cater, A. J. *Med. Offr*, Oct. 1, 1954, p. 173.

home and is now an accepted and welcome institution there.

The child-welfare centres, then, are absolutely necessary to the medical organisation of today, but there is still so much preventive work to be done that all unnecessary curative work like minor prescribing or immunising or vaccinating should not be undertaken but be referred to the G.P. concerned. Child-welfare centres are still useful "pathological observatories," [1] and used with imagination and insight have much to teach.

Morpeth. J. H. THOMPSON.

THE UNLOCKED DOOR

SIR,—In your leading article of Nov. 6, on the unlocked door in mental hospitals, you refer to "this new policy." It was one which, in its modern form, was instituted by my father, Dr. T. S. Good, in 1922, at Littlemore Mental Hospital, Oxford. In his presidential address [1] at the 89th annual meeting of the Royal Medico-Psychological Association, in 1930, he referred to the method in these words:

"This war experience further suggested that it might be possible to run a mental hospital almost entirely on the open-door system, and on the evacuation of Littlemore by the Pensions Ministry, the Committee authorised extensive alterations and improvements to enable the hospital to be run in this manner. This course was also strongly supported by the Board of Control. Structural alterations consisted of demolishing many single rooms and thus enlarging many of the wards. Windows were lowered, and all stops preventing windows opening to their full extent were removed, except in two wards on either side; in these, which were intended for very demented or excited patients, the stops were removed from the top half only.

"As far as my own experience goes, I am convinced that freedom from the restriction of locked doors is conducive to quietness and contentment of the patients. Within the first week we had two escapes through the open windows, but on pointing out to the patients, when recaptured, that it was foolish to escape as we should have to recapture them, but more foolish still to use windows when the doors were open, we have had little further trouble. Certainly some delirious and deluded patients have wandered from the wards, but as regards escapes in the full sense of the word, those that have occurred have been almost entirely from the four wards that are under lock and key. The system of unlocked wards night and day seems, as far as we are able to observe, to be a factor in removing from the patient's mind that restlessness which is so common in people under compulsory confinement. It is, moreover, a suggestion to them that they are to be trusted to assist in their own recovery, and the suggestion is, we think, strengthened by the fact that if they refuse to adjust they are sent to one of the locked wards, being told that they will remain there until they promise to try and obey the rules. In practice we find that this procedure has, on many occasions, appeared to wake the patient to a sense of responsibility and control. Especially is this so in the manic types. Only 18% of men and 19% of women are ever under lock and key.

"Within the grounds my patients roam as they please. Parole outside the grounds is also allowed, and patients on parole are encouraged to take more irresponsible ones for walks. We freely admit that there appears some risk in this latter procedure, but as far as our experience goes this risk is small. With the psychotic patients one has to realise that it is not what they really do in many cases that deters us from trusting them, but our imaginary apprehensions of what they may do. This freedom is extended to the so-called suicidal patients, and we have no suicidal caution cards. The question of suicide is freely discussed with patients who have the tendency. In our experience one of the commonest causes of this tendency is the fear of becoming insane, which in plain words is the fear of being certified. We have so often had both in-patients and out-patients who declare that their attempts on their life have been due to this fear of certification, that we are inclined to believe that if suicide were treated by law as a crime only and not allowed as a fact indicating insanity in a certificate, it might possibly deter many from attempting to take their own lives."

One hopes therefore that the present-day revival of these methods will foster the intention originally underlying them—namely, to bring the practice of general medicine and that of psychiatry as close together as possible.

Aylesbury, Bucks. MICHAEL SAXTY GOOD.

1. *J. ment. Sci.* 1930, **76**, 602.

PLASTIC SPLINTS

SIR,—In the July issue of the *Annals of Physical Medicine* Dr. H. van Swaay, of The Hague, described a method of moulding splints directly to the patient.[1] His method is, in principle, the same as that described in my article of Nov. 6, and I should like to draw your readers' attention to Dr. van Swaay's work. In the method I described 'Polythene' was the outer layer, whereas Dr. van Swaay uses polymethyl metacrylate ('Perspex').

Whittington Hospital, London, N. 19. J. B. BRENNAN.

1. *Ann. phys. Med.* 1954, **2**, 101.

TUBERCULOSIS IN CHILDREN

SIR,—In his letter of Nov. 13, Dr. Bentley asks how I separate benign from malignant primary cases when there is no radiologically visible lesion. This is not possible on the basis of radiology alone and of one examination, but in practice it is hardly ever important. I would, at least provisionally, classify such cases as benign primary disease and deal with them accordingly. I would, however, keep them under observation and, according to indications from clinical examination, serial radiographs, tests for tubercle bacilli, sedimentation-rate, &c., I would hope to discover promptly the minute fraction which might later exhibit signs of malignant primary disease.

Dr. Bentley writes as if diagnosis depended upon a chest film alone, omitting even the enormous advantage of knowing whether or not the patient is really ill. The essential difference between our views is that he suggests the treatment of all primary tuberculosis (perhaps especially in infants), as if they might all become malignant, whereas I would consider them benign (as the vast majority are) unless or until the signs of malignant primary disease appeared. It is granted that, in a few cases which may be provisionally diagnosed as benign primary disease, a sudden unexpected bronchogenic or hæmatogenous spread may occur, owing to the proximity of the focus or lymph-node to a bronchus or blood-vessel. But sudden clinical illness, as also in the case of meningitis complicating *benign* primary pulmonary disease, would at once draw attention to this. The great majority of malignant primary cases are diagnosable at the first examination, and present with visible lesions, clinical illness, and often discoverable tubercle bacilli. Naturally these cases, irrespective of age, should have prompt chemotherapy.

The principles I have in mind can be fully understood only by physicians who have learned to *think pathogenetically*, especially in terms of the application to every clinical problem of Rich's five fundamental factors of influence—namely, quantity and virulence of bacilli, natural and acquired resistance, and hypersensitivity. For example, benign and malignant primary disease (with the above-mentioned exception) start differently, pursue a different course from the stage of established infection and the original lesion to the onset of clinical illness, radiological signs, and beyond; and they usually end differently, whether treated or not. A physician armed with this knowledge and the necessary experience will seldom fail to make an "exact diagnosis" without a delay that would be inimical to the patient.

Dr. Bentley's second point is that "secondary disease" (or "chronic pulmonary disease" as he calls it) "sometimes arises so closely after the initial infection that the primary disease cannot possibly have had time to become quiescent." This is a typical statement illustrating the current confused thought on tuberculosis. The type of case to which I think he refers is really malignant primary disease with caseous bronchopneumonia and not secondary disease at all. There is a superficial resemblance to fibrocaseous secondary disease in such cases, especially when judgment is based mainly on chest films. As long ago as 1940 I pointed out the difference, which I had learned only after years of study of necropsies in a country where malignant primary disease was much more prevalent, in adults as well as children, than it is here.

Briefly, the malignant primary cases always showed fresh macroscopic involvement of regional hilar nodes and never a calcified focus, whereas at least half of the fibrocaseous secondary cases exhibited signs of a residual primary lesion, and not of fresh macroscopic hilar-node involvement. Such findings, together with the history of the case and localisation of the lesions, clearly showed which cases were primary and which were secondary. As examples, a study of cases 15, 36, and 55 and 56 in my book [1] will help to show the fundamental importance of this difference. But even apart from this, if one applies the facts already known about pathogenesis it will be realised that active primary and active secondary disease in the same person at the same time is impossible. Dr. Bentley's statement is an extraordinary confession, coming from one who, in his recent book, claims to have classified pulmonary tuberculosis into two main types "primary and chronic" which "are seen to follow an entirely different pattern." He does not seem to understand the classification which he himself has used. For example, his group "miliary tuberculosis" is classed among the primary forms and yet includes cases of chronic tuberculosis (secondary) in which miliary spread has occurred. The latter is not "miliary tuberculosis" but "miliary dissemination"—a mere complicating event which cannot in itself determine the type or form of the disease.

Dr. Bentley states that he and many others would wish to "share my knowledge." I can at present only ask him to study more carefully my book published in 1953 [2] in which the classification into two types, four forms, and numerous subforms is set out and illustrated by many examples; and to read my forthcoming book [3] in which much more evidence by way of proof is adduced, and in which his questions are fully answered. Admittedly there are many points which call for critical discussion and debate, and I am very willing to attempt to elucidate them if he or any one else will offer me a platform.

London, N.W.8. MILOSH SEKULICH.

DISTRIBUTION OF CHRISTMAS GIFTS

SIR,—The Royal Medical Benevolent Fund hopes to post the Christmas gifts to its beneficiaries in the very near future.

May I remind your readers who have not already contributed, to send donations marked "Christmas Gifts," to the Secretary of the Fund, 1, Balliol House, Manor Fields, Putney, London, S.W.15, as soon as possible.

FRANK JULER
Honorary Treasurer.

1. Sekulich, M., Simovich, M. Modified Bard Classification (in Serbian). 1940.
2. Sekulich, M. Classification of Pulmonary Tuberculosis. London, 1953.
3. Sekulich, M. Tuberculosis: Classification, Pathogenesis and Management. (In the press.)

Obituary

HARRY MOSS TRAQUAIR
M.D. Edin., F.R.C.S.E.

Dr. H. M. Traquair, whose death on Nov. 14 we announced last week, had held office as president of the Royal College of Surgeons of Edinburgh and of the Ophthalmological Society of the United Kingdom. During his long term as ophthalmic surgeon to Edinburgh Royal Infirmary he set a high standard in operative and diagnostic work.

He was born in Edinburgh in 1875, the son of R. H. Traquair, M.D., F.R.S., and was educated at Edinburgh Academy and Edinburgh University, where he graduated in medicine with first-class honours in 1901.

After postgraduate study at Halle, he returned to Edinburgh to take his M.D. in 1903 and his F.R.C.S.E. the following year. He quickly established himself in consultant practice, joining the staffs of the Royal Infirmary, Leith Hospital, and the Edinburgh Eye Dispensary, and he was for a time oculist to the Edinburgh and Leith School Board. Through the years he acquired the remarkable knowledge of neurological ophthalmology which enabled him to reduce haphazard charting of failures in the visual field to an exact diagnostic routine, and his *Textbook on Perimetry*, first published in 1927, is full of accurate and original observations which lighted much that had been obscure. In due course he was accorded every distinction his specialty had to offer, including the Middlemore prize (1920), Nettleship medal (1922), Doyne medal (1923), and Mackenzie medal (1939).

[Drummond Young

J. R. P. writes: "Traquair combined a brilliant intellect with a painstaking exactness in all his research, and, in addition, he had exceptional ability as a teacher. Those of us who had the good fortune to work with him will always appreciate his readiness to help in the solution of any clinical problem. He was prepared at any time to share his immense experience and knowledge, and discussion with him enlarged and enriched the minds of those with whom he was in contact. At home Harry was the kindest and most interesting of hosts, with the widest general knowledge on many subjects, especially the artistic. In his spare time and holidays he was a keen trout-fisher and experimenter with lures of his own design. During his long illness he retained his clear and critical judgment, and till the very end was keenly interested in all developments in ophthalmology."

N. M. D. describes Dr. Traquair as a great scientific doctor and humanist with a continuing influence on medical science. "A man gifted with powerful intellect, he had wide interests in biology and philosophy. Those he focused on his chosen work as a clinical oculist and as ophthalmic research scientist. These activities inevitably led one of his calibre far into general medicine and neurology. A man exemplifying scientific integrity and comradeship, he was quick to appreciate similar great qualities in others, and he was in turn recognised and respected as the acknowledged authority on neurological aspects of ophthalmology or visual aspects of neurology throughout the world.

"When I returned from a period of training with the late Dr. Harvey Cushing, I found in Dr. Traquair a powerful friend and promoter of scientific modern surgical neurology. His practical help in investigation and management of patients, his constant inspiration and encouragement, were generously available; his wise and powerful influence in the counsels of the Edinburgh school made progress in surgical neurology possible. His hospitable home, redolent of his wide interests and artistic tastes, was ever open to his junior colleagues for

moral, intellectual, and physical inspiration and refreshment."

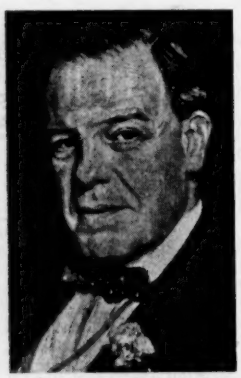
Dr. Traquair married in 1906 Susan Nairn. She survives him with a son and a daughter.

DUNCAN CAMPBELL LLOYD FITZWILLIAMS

C.M.G., M.D., Ch.M. Edin, F.R.C.S., F.R.C.S.E.

Mr. Duncan Fitzwilliams, consulting surgeon to St. Mary's Hospital, London, died on Nov. 18 at the age of 75.

He was born in Cardiganshire and he grew up in a family of eight sons. His boyhood and youth were spent in the country pursuits of hunting, shooting, and fishing, but in his late teens he was sent with his youngest brother to study medicine in Edinburgh. Here he threw himself into his study and sport with enthusiasm. While at the university he became heavyweight boxing champion of Scotland and successfully defended his title on a later occasion. He also rowed for the university, but although he had a great interest in them he never excelled in any ball game. While still a student he went to the Boer War as an Army dresser and was awarded the Queen's Medal with four clasps. He graduated M.B. in 1902 and gained the Leckie-Mactier fellowship. He also became president of the Royal Medical Society. During the next few years, while holding house-appointments in Edinburgh, he continued his studies taking the F.R.C.S.E. in 1904, the M.D. with gold medal in 1905, the F.R.C.S. in 1906, and the CH.M. with high commendation in 1907.



[From a portrait by Maurice Codner

Coming to London he took the post of resident medical officer to The Hospital for Sick Children, Great Ormond Street, and in 1909 he was appointed an assistant surgeon to St. Mary's Hospital. When the 1914 war broke out he was on the reserve of officers and immediately he went to Malta in command of a medical unit. Later he served for a time as surgeon to the Prince Mircea Hospital in Rumania. When Rumania was overrun he was posted as surgeon to the North Russian Expeditionary Force to Murmansk where he remained until the end of the war. In 1919 he was appointed C.M.G., and he was also made a chevalier of the Legion of Honour.

After the 1914 war he quickly built up his practice again. His surgical interests were largely centred on the operative and radium treatment of cancer and he joined the staff of the Mount Vernon Hospital. His writings included textbooks on diseases of the breast (1924) and on the radium treatment of cancer (1930) and on *Cancer of the Breast* (1947). He was popular with his students perhaps because he retained a youthful spirit throughout his life. He had a great sense of humour and soon made friends of children, a gift which stood him in good stead in his work as surgeon to the Paddington Green Children's Hospital.

He held office as master of the Society of Apothecaries from 1949 to 1950 and he also served as president of the Harveian Society and of the West London Medico-Chirurgical Society. His interest in the history of medicine was reflected in his studies of doctors and scientists of the past.

C. A. P. writes: "Duncan Fitzwilliams was huge in body, with the deft fingers of a woman, and operated, with incredible speed, in a method peculiar to himself and quite inimitable. His dexterity in operating upon infants came as a surprise to the onlooker watching this large man. When the permeation theory of the spread of cancer was at the height of its popularity amongst surgeons and pathologists alike, he wrote a strongly critical article in the *British Journal of Surgery* pointing out the absurdities to which a blind acceptance of this theory led. But he was alone in the wilderness in those early days. He was the originator of the local excision of small carcinomata of the breast. He seemed to come to the decision to adopt this procedure intuitively, and although it was very unfavourably received, he stuck to his position and in the course of years was able to bring forward proof to vindicate it. Although Mitchiner followed his lead with similar success, it is only of recent years that careful clinical statistics have shown how little the ultimate fate of a woman with a carcinoma of the breast depends upon the extent of the operation.

"Fitzwilliams had a heart commensurate with his body. He was completely free of the petty jealousies so often met with where men compete. His friendship was of value beyond price. He was hospitable to a degree. He helped without restraint the poor and unfortunate, but very few even of his intimates knew this and I am sure he quickly forgot about these kindly acts himself."

By his first marriage to Mary Elizabeth Filley of St. Louis, U.S.A., Mr. Fitzwilliams leaves two sons and three daughters. She died in 1919 and he married as his second wife Francesca Christine Wagner, M.B.E. Since his retirement he had lived in Jersey, but he came to London from time to time to renew old friendships.

ROBERT STANTON WOODS

Kt., M.D. Lond., F.R.C.P.

Sir Robert Stanton Woods, consulting physician to the department of physical medicine of the London Hospital, died on Nov. 19, in his own hospital.

He was born in 1877 in Stewartstown, co. Tyrone, the fifth of the ten children of Robert Woods, J.P. He received his early education at The Royal School, Dungannon, and later came to London to study medicine at University College and at the London Hospital, where he was joined by two of his brothers. He was a student at the London in the great days of Frederick Treves, Fenwick, and Jonathan Hutchinson, and after he graduated in 1904 he held, as was customary then, every appointment on the house before he became medical registrar and lecturer. In this post his power and willingness to teach were already evident, and in due course he was promoted to the staff.

[Walter Stoneman

His appointment in 1911 as physician in charge of physical medicine was an innovation, not only in the hospital but in all England. He found himself responsible for physical treatments of great variety, hitherto carried out by members of the nursing staff in widely separated attics and basements of the hospital. He set himself the task of coördinating the work of his department, ensuring that the treatment for which he was responsible was properly carried out and that suitable centralised accommodation was provided. Thanks to his efforts and perseverance, by 1936 a large new department had been built and a school of physiotherapy started to train students for the examinations of the Chartered Society of Physiotherapy.

He was called in by Lord Dawson to join the team chosen to look after King George V in his illness, and in 1929 he was knighted for his services. When the second world war came he was too old to rejoin the R.A.M.C., in which he had served in the first war. But although he was near the retiring age he found that he was still needed. He became adviser in physical medicine to the Ministry of Health and organised the physical medicine services of the Emergency Medical Service, and he carried on alone the work of his department which his juniors had left for military service.

In all these crowded years he was never too busy to help. A relative recalls with compunction: "I was

amazed by his patience and kindness. The whole family worried him with their illnesses and their jobs, and their friends' illnesses and jobs. I have never known him refuse help, advice, or time over anything, from warts on one's child's hand to a convalescent home for one's brother's ex-housekeeper." His colleagues, too, turned to him for help. As one of them writes: "He was continually consulted by doctors and by their wives and families. Tall, handsome, and distinguished he remained as modest and devoted to all his patients as ever, despite the growing calls made on his time by committee work. He left a great department and a memory dear to men who knew him."

Of Woods's work in his own specialty, W. S. T. writes: "He was recognised by his medical and surgical colleagues as no mere technician but as a sound clinician. He was skilled in the prescription and the techniques of physical treatments, but he never changed his opinion that a true doctor could not be solely a therapeutist but must accept responsibility for diagnosis and clinical management in his practice.

"He was a shy man and some found him difficult to know. But his shyness hid a generous and lovable character. He was easily moved to deep and practical sympathy for the victims of painful and crippling disorders who came to him for help. He was a modest man and was well aware of the great gaps which existed in the ætiological and therapeutic knowledge of the diseases which he had to treat. He refused to be fooled or led astray by irrational and new-fangled fads or fancies, and he had the courage to acknowledge his ignorance where lesser men might have sought refuge in bluff and long words. From his juniors he expected loyalty, and in return he steadfastly gave them his own loyalty. We mourn a kind and good man."

The loss of his only son on active service in 1942 was a blow from which Woods never fully recovered. He is survived by his widow and a daughter.

REGINALD WORTH

O.B.E., M.B. Durh.

Dr. Reginald Worth, formerly medical superintendent of Springfield Mental Hospital, Tooting, died on Nov. 15 at the age of 79.

He was born at Anderton, in Cornwall, the son of Dr. E. J. Worth, and he was educated at Epsom College and St. Mary's Hospital. After qualifying in 1896 he held a house-appointment at Cardiff Infirmary. Soon afterwards he joined the staff of Springfield Hospital, later becoming senior medical officer and in 1912 superintendent. For many years he also held the appointment of lecturer in psychological medicine at Westminster Hospital.

A. A. writes: "Dr. Worth had a long and much appreciated association with Westminster Hospital: not only academically as lecturer and demonstrator to students in the medical school, but equally, or more, important, socially. At the end of the first world war, the state of the school was precarious. One circumstance, by no means insignificantly prejudicial to prospective students, was complete absence of any athletic or sporting amenities and conveniences. Dr. Worth proved a veritable god out of the machine by offering the commodious fully comprehensive Springfield Ground with the proviso that the Westminster Hospital staff would regard themselves as at his service when required. And although this gesture of a *quid-pro-quo* was accepted in the spirit in which it was offered, it is unquestionable that Westminster gained a very great deal for very little. Until this year Springfield remained Westminster's official sports ground; and even if the present generation of students is unfamiliar with the history of their predecessors, the surviving remnant of Worth's generation can never fail in grateful recollection.

"Dr. Worth was himself a first-class golfer; and at one time a scratch player. He was a good cricketer and enthusiastic in all other sports.

"Though he published little he was an astute clinician of the old school, and if his teaching lacked the spectacular element it was distinguished by shrewd common sense."

ARTHUR JAMES BALLANTYNE

M.D., LL.D. Glasg., F.R.F.P.S.

Dr. A. J. Ballantyne, emeritus professor of ophthalmology in the University of Glasgow, died on Nov. 10 at his home in Killearn.

The son of a Glasgow merchant, he was born in 1876, the youngest member of a large and brilliant family. From Garnethill School he went to the University of Glasgow where he graduated M.B. in 1898. After holding house-appointments at the Glasgow Royal Infirmary and Eye Infirmary, he set off with George Coats, afterwards curator and surgeon at Moorfields, to spend a *Wanderjahr* at the Viennese school of ophthalmology. On his return to Glasgow he was appointed a junior on the staff of the Glasgow Eye Infirmary. In 1901 he received his M.D. for a thesis on contusion injuries of the eyeball, illustrated by his own drawings, and in 1906 he was elected F.R.F.P.S. Unlike most of his generation, he did not enter general practice while he was becoming established as a specialist. From 1909 until 1914 he held the chair of physiology at the Anderson College of Medicine; but, even so, these early years must have been lean ones. This experience probably accounts for his view, often expressed to his juniors, that a hard beginning was the best apprenticeship for consultant practice.

[Annan

In 1909 he was appointed surgeon to the Glasgow Eye Infirmary at the then unusually early age of 33. Throughout this entire period he kept his connection with the medical wards of the Glasgow Royal Infirmary, and particularly with those of Dr. John Cowan. It was there that he obtained a grounding in the medical aspects of ophthalmology, and thus laid the foundation for the work of his later years. During the 1914–18 war he served in a general hospital in Salonika as ophthalmic specialist.

At the Eye Infirmary he taught both undergraduates and postgraduates, and he was successively lecturer in ophthalmology at St. Mungo's College and at Anderson's College, until in 1920 he was appointed to the lectureship at Glasgow University. When on the point of retiring from the Eye Infirmary, he was appointed the first occupant of the newly created Tennent chair of ophthalmology at the university, and a director of the Tennent Institute for Research and Postgraduate Teaching of Ophthalmology at the Western Infirmary. This new appointment gave him the opportunity, the material, and the facilities for work which he had long been planning on the correlation of the ophthalmoscopic appearances with the pathological alterations in the choroid and retina. He curtailed his private practice and gave most of his time to research. During the next ten years he published his series of papers on the vascular changes of diabetes and hypertension. For this work he was peculiarly adapted. His drawings and paintings of the fundus were those of an artist, and not the usual productions of an ophthalmologist. He had the technical skill to depict accurately on paper what he saw in the fundus. He had the power of recording in word and picture the changes taking place in the fundi, and the patience to wait until the fundus came to pathological examination. He also devised new methods of localisation and preparation of the specimens. In 1938, Prof. Arnold Loewenstein, an exile from Czechoslovakia, joined him to form a stimulating partnership.

Professor Ballantyne's original work was recognised by the award of the Mackenzie medal, for the institution of which he himself was largely responsible, and of the Nettleship medal of the Ophthalmological Society of the United Kingdom. He delivered the Montgomery lectures in Dublin in 1943, and the Doyne lecture at Oxford in 1946. He also lectured in Basle and in America. He held office as president of the Ophthalmological Society of the United Kingdom, and he was an honorary member

of the Chicago and Irish ophthalmological societies. He received the honorary degree of D.SC. from Roanoke College, Virginia. On his retirement in 1941 from his chair, Glasgow University conferred on him the honorary degree of LL.D. This retirement, however, made little difference to his mode of life. He carried on his work at the Tennent Institute, and his publications continued to appear.

A colleague writes: "A dexterous and fastidious operator, an excellent clinician, and a meticulous observer and recorder, Ballantyne was a prodigious worker. But he had cultural interests outside his profession. He had a deep interest in music, and he seldom missed a performance of the Scottish Orchestra or of the Chamber Music Society. He was keenly interested in art, and although his own painting was medical and representational, his artistic tastes were seen in the decoration of his own home, and in the colour work which he did with a cine-camera. He served on the council of the Glasgow Institute for Fine Arts for some years, and was on the hanging committee.

"Always a quiet man, with a dry sense of humour, he was slow to show feelings under any circumstances. But the death of his wife in 1928, though borne with a stoical outward calm, and without any interruption of his daily tasks, made a profound change in him. He became more devoted to his profession, and had fewer outside social contacts, and was much more driven into himself. Critical in nature, and somewhat hard on his juniors, he never demanded more than he could perform himself. He set a standard of work that few could attain. Careful in little matters, he had a generosity and charitableness which were freely at the call of any good cause.

"His last years were spent on his work on the pathology of fundus conditions, and only a few days before he died he completed a sixth revision of the text. It was characteristic that he should consider so many revisions necessary. It is to be hoped that these manuscripts will soon find a publisher, for they will form the best memorial to Arthur Ballantyne."

THOMAS WILLIAM JAMES JOHNSON
M.D. N.Z., F.R.C.P., F.R.A.C.P.

Dr. T. W. J. Johnson, who died in Auckland on Oct. 16 at the age of 69, had been senior physician to the Auckland Hospital, examiner in medicine to Otago University, and a member of the Medical Council. He was a foundation fellow and vice-president of the Royal Australasian College of Physicians, and took a leading part in many organisations and activities connected with Auckland Hospital.

He entered Otago University as a junior entrance scholar from Thames High School and Auckland Grammar School. During his medical course he won every prize offered, including the medical travelling scholarship, as well as receiving his hockey blue and being president of the students' association. After qualifying in 1909 he visited this country and held resident posts at the Middlesex Hospital and Maida Vale Hospital. After his return to New Zealand he spent ten years in general practice in Napier. Then, after a further period abroad, settled in Auckland as a consulting physician. He was elected F.R.C.P. in 1932.

A colleague writes: "Dr. Johnson soon acquired a large consultant practice, being widely known for his diagnostic acumen. In private life he was a keen angler and golfer and student of Maori history, lore, and language. He was an authority on New Zealand flora and fauna. Once asked by an English physician why he did not stay in London, as he had many times been asked to do, he replied 'I thought of your grey skies and our blue ones, so I chose the blue.'"

Dr. Johnson is survived by his widow and twin sons, Maurice and Alan, who are both practising in Auckland.

Births, Marriages, and Deaths

BIRTHS

JACOBY.—On Nov. 13, at Prospect Heights Hospital, Brooklyn, New York, to Thelma, wife of Dr. M. G. Jacoby of Sunderland, England—a son (David Bernard).

RICHARDS.—On Oct. 23, at City Hospital, Saskatoon, Saskatchewan, Canada, to Elizabeth (née Mitchell), wife of Dr. A. G. Richards—a son.

Notes and News

UNIVERSITY COLLEGE HOSPITAL, IBADAN

On Nov. 18 Sir John Macpherson, Governor-General of the Federation of Nigeria, laid the foundation-stone of the new teaching hospital at Ibadan. The ceremony marked an important stage in the development of higher medical education in Nigeria. Ibadan University College has for some time been recognised by London University for preclinical instruction, but to complete their training the Nigerian students have been obliged to come to London medical schools. Now, however, they will have in their own country an establishment capable of providing a complete course of clinical instruction.

Planned on modern and imposing lines, the new hospital (which it is hoped will be in full operation by October, 1956) will accommodate four hundred and ninety inpatients. A spacious outpatient department will be provided, and ancillary buildings will include a school of nursing and a nurses' home, a school of hygiene, a medical students' hostel, and housing accommodation for medical, administrative, and technical staff. The ultimate aim will be to produce fifty medical graduates each year, and to achieve the standard of teaching necessary for recognition of the curriculum by London University. In addition, nurses will be trained at the hospital up to the standard prescribed by the General Nursing Council of England and Wales. A staff is already being built up: a house-governor, a matron, and a number of medical consultants have been appointed, and a scheme is in hand for training some twenty Nigerians for a wide range of hospital appointments. The project, which deserves the admiration of all who are interested in the progress of medical education in backward countries, has been financed entirely by the Government of Nigeria.

FOOD CONSUMPTION IN 1952

THE annual report for 1952 of the National Food Survey Committee [1] recalls that in the early part of that year food-supplies were adversely affected by import restrictions, and the national diet was somewhat less varied and attractive than in the two previous years. Compared with the position before the war, the most important differences were the greatly increased supplies of milk and also of potatoes (though consumption was declining), the continued shortfall in meat-supplies (11% increase during the year), and the replacement of butter by margarine. The most distinct changes between 1951 and 1952 were increases of 15% in the bacon ration and decreases of 27% and 40% for butter and cheese. Expenditure on food increased steadily, partly because of the inflationary movement in the national economy, and partly because of the policy of reducing or removing subsidies; but Ministry of Labour statistics showed that average weekly earnings kept in step with the general retail-price level. The average total value per head per week of household food consumption, including food bought and "free" food (from garden, allotment, or farm or from an employer), had been 19*s.* 5*d.* in the fourth quarter of 1951; and in each of the quarters of 1952 it increased until in the fourth quarter it was 22*s.* 1*d.*

HOSPITAL STAFF

THE Medical Whitley Council has agreed on new rates of remuneration for locums in the hospital service up to the grade of senior registrar. The old and new rates per week are as follows:

Grade	*Old rate*	*New rate*
House-officer	£8	£9 10*s.*
Senior house-officer	£13	£14 10*s.*
Registrar	£16	£17 10*s.*
Senior registrar	£22	£24
Junior hospital medical officer	£16	£17 10*s.*

The new rates apply with effect from April 1, 1954. The Minister of Health [2] points out to hospital authorities that "the appointment of locums in these grades should be necessary only in very exceptional circumstances. The salary-point at which a doctor becomes entitled to six, instead of four, calendar weeks' leave per annum is to be raised to £1050, from April 1, 1955. The same changes are to be made in the terms of service of hospital dental staff.

1. Ministry of Food. Domestic Food Consumption and Expenditure, 1952: Annual report of the National Food Survey Committee. H.M. Stationery Office. Pp. 102. 4*s.*
2. H.M.(54)98.

CERVICAL-DISC LESIONS

ADDRESSING the Devon and Exeter Medico-Chirurgical Society on Oct. 28, Mr. H. Osmond-Clarke said that in cervical-disc lesions there might be lateral protrusion involving a root and giving rise to a clinical picture resembling that of an acute lumbar-disc lesion (acute pain referred down a limb, muscle spasm and perhaps deformity, restriction of movement, and neurological signs); or, more rarely, the protrusion might be central, involving the cord and giving rise to more or less spastic paralysis. Radiography showed reversal of the normal cervical lordosis, and myelograms were of value. Lateral protrusions should be treated first with traction and bed rest, later with a collar. Central protrusions urgently required decompression. In chronic cases—the condition known as cervical spondylosis—there were degenerative lesions of discs (most frequently C5–6 and C6–7) with narrowing and secondary osteo-arthritic changes causing anterior and posterior marginal lipping of the vertebral bodies. The posterior marginal lipping formed a fibro-cartilaginous-bony bar extending across the back of the bodies and encroaching on the spinal canal and the exit foramina. These were further narrowed by lipping of the neuro-central joints of Luschka. Both cord and roots might be affected through fixation by scarring and adhesions, through pressure from osteophytes, and through interference with blood-supply.

As seen in orthopædic practice these patients complained more often of pain in the arm and head than in the neck; they had diffuse headaches, occasional stiffness and pain in the neck, tingling ("pins-and-needles") radiating down one or both arms into the hand and across the pectoral region in the distribution of the 6th and 7th cervical dermatomes; usually tenderness over the lower cervical spine in the midline and laterally, and in the trapezii; restriction of movement with local and often increase in distal, discomfort on forcing; sometimes positive neurological signs, varying from paræsthesia, hypo-æsthesia, and analgesia in the 6th and 7th dermatomes to grosser signs in arms, legs, and trunk when the roots and cord were severely involved. Frequently the syndromes of supraspinatus tendinitis and "tennis-elbow" were also present. The relationship was by no means clear.

The differential diagnosis must be made from inflammatory and neoplastic lesions of the cervical column and its contents; lesions of the cervico-brachial outlet (e.g., cervical rib); carpal-tunnel compression lesions of the median nerve; and diseases of the central nervous system (e.g., disseminated sclerosis).

Heat and intermittent longitudinal stretching relieved about two-thirds of all early mild cases. Occasionally manipulation under anæsthesia was helpful at this stage (it should never be used when radiographic changes were gross). Presumably these measures acted by stretching scar tissue around the nerve-roots. Bed rest, with continuous traction for two or three weeks followed by a collar might be necessary. One or more of these three measures relieved 90–95% of all patients seen in orthopædic practice; but if a collar gave complete relief followed repeatedly by relapse when it was removed, localised fusion was indicated. Gross cord or root involvement required careful neurosurgical and orthopædic assessment. The correct operation was decompression of the cord and roots by laminectomy and "unroofing" of the foramina. Attempts to remove the bony bars in front of the cord or the roots were unwise; they were likely to increase local neural damage either at the time of operation or subsequently by thrombosis. Division of the denticulate ligaments helped to free the cord. When the neurosurgeon had completed this tricky and time-consuming decompression the orthopædic surgeon should fuse the affected area by whatever method seemed desirable. Not more than 2% of these patients required operation; and the decision to operate, and the operation itself, were combined neurosurgical and orthopædic ventures.

Postgraduate Lectures at Worcester

In response to a request from local members of the College of General Practitioners, a short course of postgraduate lectures is being given at Worcester.

The next lecture will be at Worcester Royal Infirmary on Wednesday, Dec. 1, when Dr. C. A. H. Watts (Leicester) will speak on Depressive Disorders in General Practice. At Ronkswood Hospital on Thursday, Dec. 9, a discussion on the Treatment of Hypertension will be opened by Dr. C. J. Cropper and Mr. P. W. Houghton. At Worcester Royal Infirmary on Wednesday, Dec. 15, Dr. P. Kidd will speak on the General Practitioner and the Laboratory. All the meetings will be at 3.30 P.M. for 3.45 P.M.

University of Cambridge

On Nov. 13 the following degrees were conferred:

M.B., B.Chir.—Peter Gortvai.
M.B.—Eric Burkinshaw (by proxy).

The Raymond Horton-Smith prize for 1953–54 has been awarded to Dr. P. A. G. Monro (St. John's College) for his essay on Recovery of Function after Sympathectomy.

University of London

The following degrees have been awarded:

M.S.—G. J. Hadfield.
Ph.D. (on the faculty of medicine).—M. H. Bassioni, A. N. Davison, S. J. Kiebanoff, T. A. Quilliam, A. A. H. I. Soliman.

The following have passed the final examination for the degree of M.B., B.S.:

Honours.—D. N. Cons (*c*), St. Thomas's; R. C. O. Eruchalu (*b*), U.C.H.; W. W. Holland (*c*), St. Thomas's; Mary P. Mearman (*b*), Roy. Free; Kathleen C. Morton (*b, c*), Middlesex; Freda Newman (*c*), Roy. Free; P. J. Taylor (*a*), St. Thomas's.
(*a*) distinguished in pathology; (*b*) distinguished in medicine; (*c*) distinguished in applied pharmacology and therapeutics; (*e*) distinguished in obstetrics and gynæcology.
Pass.—Jean M. Adams, R. J. W. Adamson, S. J. P. Adcock, A. M. O. Akinjagunla, M. R. Alderson, A. B. Allen, Anthony Allibone, D. A. Ampofo, G. H. Anderson, D. A. Andrewes, F. M. Andrews, I. S. Audu, B. S. Baker, Elizabeth S. M. Barnes, A. A. Barton, A. E. Bashford, Norma A. Beardwell, R. W. R. Beasley, Felicity M. Bedford, D. L. Bee, N. L. Beisly, J. G. Benjafield, D. A. Bennett, Gerald Berks, R. V. Berry, H. R. Bissoon Dath, A. A. Black, M. W. Black, John Blake, R. S. Blewett, Philip Bliss, Martin Bloom, Diana Bovill, Patricia M. Boyd, P. S. Boyne, M. G. Bridger, L. R. Bromwich, W. E. Brooke, D. K. Brooks, Daphne J. Broughton, A. M. Brown, D. P. Brown, Michael Brown, P. H. Browne, A. J. Bruce, Patricia Burne, Morag F. Cameron, B. R. T. Carroll, A. P. Carter, R. H. Castle, W. B. Castle, J. F. Catchpool, Norah B. A. Chase, A. R. Christmas, Raymond Chynoweth, K. A. Clare, Margaret A. Clark, J. G. Cochrane, Sheila E. Coggins, J. A. Collings-Wells, B. B. Collins, R. A. Cooper, P. S. V. Cox, Anne S. Crabtree, D. F. Craggs, Caroline J. Cranston, Anne M. Davies, Dilys K. Davies, J. L. Davis, C. F. Day, J. M. M. de Mowbray, P. J. Denvir, E. J. A. Dodds, Joseph Downes, Peter Drummond, A. H. Dunkley, R. G. Dunning, M. O'N. East, W. M. Easther, Marian S. Edwards, Barry Ekins, Michael Entwisle, F. A. Fairweather H. P. L. Falla, J. V. Farman, C. D. Farrier, C. I. Finn, Lorna O. A. Fletcher, Hamish Forbes, Yves N. P. Forget, Julia M. Fourman, Patricia J. Fowler, R. M. Franklin, Patricia F. Frisby, P. C. Fulford, Celeste U. Furlong, Beatrix I. Gampell, A. B. Gardiner, A. H. M. Gaze, S. A. A. George, D. A. Gill, Pauline M. Gledhill, J. S. Goodall, G. C. L. Goss, Geoffrey Gover, M. A. H. Graham, S. T. Guest, P. M. Gurrin, Elizabeth W. Hall, G. S. Hall, Laurence Hall, James Harrison, D. R. W. Hartley, R. J. Hawkins, G. A. Heasman, Leon Heffler, W. T. Henry, G. H. Herd, Margaret Hooper, P. J. Horniblow, Margaret W. Hughes, A. B. Hugo, R. J. Hunter, Hubert Inceman, P. B. C. B. Ivory, D. C. O. James, Jap Kon Soeng, Muriel L. Jones, J. W. Jordan, Amar Nath Kalra, J. H. Keen, A. E. M. Kirk, J. L. H. Laity, Robert Lakin, Parmanund Lallah, Nathan Landau, Patricia A. Laslett, Diana E. Lathbury, R. H. J. Laurence, J. E. Leaney, W. M. Lennox, Pamela A. Lidstone, D. C. Linahan, Miriam D. Lindsay, Ann H. List, J. R. Lockwood, Colin Lowson, A. H. Macdonald, James McKenna, Agnes M. Maclean, L. R. MacLean, Margaret E. Macpherson, A. R. Mainwaring, R. E. W. Manley, B. H. Markham, K. D. F. Martin, Richenda M. Martin, Pamela Matheson, C. D. May, G. W. E. Mears, A. P. Melgrave, R. L. Meyrick, Joan M. Montague, C. E. G. F. Morris, R. N. Morris, Patricia E. Moul, Margaret Muller, W. A. Murphy, Rachel E. Need, V. A. Ngu, D. W. Norton, P. E. I. Nwabuoku, D. B. A. Ofomata, M. I-M. Ogbeide, Patrick O'Gorman, R. A. Onifade, R. O. Ormerod, R. A. Osborn, M. J. Ostime, D. C. Ower, R. T. Pagan, Catherine Parry, Pamela B. Passmore, M. B. Pepper, M. V. Perkins, J. O. Peskett, K. D. Phillips, D. S. Pickup, G. K. Pidsley, J. A. Pollock, D. S. Porter, Muriel E. Postons, R. E. Price, W. L. G. Quinlivan, J. K. Radnor, G. D. Ramsden, A. G. Ratcliffe, G. S. Rawson, P. B. Read, Pamela A. M. Rendell, E. G. Reynard, P. C. G. A. Reynolds, C. J. Rhodes, Ahmad Ramzy Rizk, D. J. C. Roberts, J. G. Robertson, Lauchlan Robertson, M. S. Robertson, T. J. F. Rockey, P. S. Rolland, L. C. Rose, Gordon Ross, S. M. Ross, B. C. Roughton, C. A. Rushmer, Patricia M. Russell, Sidney Sackwood, G. J. Sadow, Alison A. Said, H. J. Salter, C. M. Samuel, T. G. Scott, E. R. R. Scrivener, A. S. Shalom, M. S. Shalom, Jeffrey Sherliker, K. I. Shimmings, Geraldine M. Shire, J. R. Silver, Leonard Sinclair, Andrzej Skarbek, T. G. Skinner, A. G. Slark, J. J. Slome, Margaret H. Smith, Alison Smithies, Wuraola Gbolabo Sodipe, J. A. B. Spalding, G. T. Spencer, J. S. G. P. Stableford, P. S. Stack, Peter Stanesby, M. H. Staunton, E. B. Stephens, Anthony Taylor, D. E. Taylor, R. C. Taylor, D. E. H. Tee, A. P. Thatcher, M. A. Theeman, D. P. Thomas, Pauline M. A. Thomas, T. M. Tibbetts, Patricia A. Topham, H. M. D. Utidjian, Laurence Valentine, Alice van Waterschoodt, A. H. C. Walker, Angola M. Wallace, K. H. Warden, A. B. Watson, Ian Watts, Hilary F. West, Joan M. Wetherall, Jerzy Weyland, B. R. Wheeler, Wallace White, Rosemary Whitemore, J. D. W. Whitney, Helen M. Wilkinson, P. N. Williams, Rosemary J. Willing, A. S. Willis, Doreen M. Wilson, E. G. Wilson, J. R. Wilson, Sheila A. Wood, E. J. Wrigley, S. E. A. Wyner.

University of Sheffield

Dr. C. E. Davies has been appointed lecturer and clinical teacher in medicine, and Mrs. I. G. Monypenny, F.F.A. R.C.S., instructor in anæsthetics. The J. G. Graves medical research fellowship has been awarded to Miss M. M. Platts, M.R.C.P., and the James Morrison research fellowship to Dr. R. Kilpatrick, M.R.C.P.

Royal College of Surgeons of England

On Wednesday, Dec. 8, at 4 P.M., Prof. Lambert Rogers will deliver the Bradshaw lecture at the college, Lincoln's Inn Fields, W.C.2. He has chosen as his subject Tumours Involving the Spinal Cord and its Nerve-roots.

Royal College of Surgeons in Ireland

On Nov. 19 the following were admitted to the fellowship:

N. D. Bhiwapurkar, D. A. A. Lane, J. A. Mehigan.

Ross Institute of Tropical Hygiene

An open meeting will be held by the industrial advisory committee of the institute at the Rubber Growers' Association, 19, Fenchurch Street, London, E.C.3, at 2.15 P.M., on Tuesday, Dec. 7, when Prof. George Macdonald will open a discussion on the Training of Laymen in Tropical Hygiene.

Central Council for Health Education

This council is holding a seminar for medical officers of health at St. John House, Collingham Gardens, London, from Feb. 22 to 26. The subject chosen is the Maternal and Child-welfare Centre—its Future and Educational Opportunities. Dr. Jean Mackintosh will give the opening address, and other speakers will include: Dr. A. J. Dalzell-Ward, Dr. John Burton, Dr. W. Emrys Davies, and Dr. Ciceley Williams. Further particulars may be had from the secretary of the council, Tavistock House, W.C.1.

London Medical Orchestra

A concert will be given at the London Hospital, E.1, on Monday, Dec. 13, at 8.30 P.M., when works by Handel, Beethoven, and Schubert will be played. Admission is by programme, 1*s.* 6*d.*

10 (London) General Hospital

On Nov. 19 the officers and nursing officers of this Territorial unit held a reception at the Royal College of Surgeons. The guests, who included representatives of the other Services, were received by the commanding officer, Colonel F. H. Blackburn.

Negus Endoscopes

Messrs. Down Bros. and Mayer & Phelps, Ltd., write:

"Our attention has been drawn to the manufacture by us of per-oral endoscopes designed by Mr. Victor Negus and carrying his name. It appears that they do not exactly conform with the specification approved by Mr. Negus. We, therefore, tender to Mr. Negus our sincere regret and an apology; and we undertake that in future any per-oral endoscopes sold by us and bearing his name shall conform with his specification. We also desire to intimate our willingness to replace or alter on request any instrument sold under the above misapprehension."

CORRIGENDUM—Dr. P. Lucas (*Lancet*, Nov. 13, p. 981) is a graduate of Cambridge.

Multipax Chemicals Ltd. have moved to 142, Larkhall Lane, London, S.W.4.

Diary of the Week

NOV. 28 TO DEC. 4

Monday, 29th

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. E. A. Carmichael: Some Observations on the Autonomic Nervous System.

INSTITUTE OF NEUROLOGY, National Hospital, Queen Square, W.C.1
5.30 P.M. Dr. Macdonald Critchley: Disturbances of Vision—at the Highest Level.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4.30 P.M. (Chelsea Hospital for Women, Dovehouse Street, S.W.3.) Mr. Allen Brews: Chorion Epithelioma and Vesicular Mole.

CAMBRIDGE UNIVERSITY, Department of Pathology, Tennis Court Road, Cambridge
5 P.M. Dr. J. Frimann-Dahl (Oslo): Radiological Examinations in Acute Abdominal Conditions.

Tuesday, 30th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. Mary Pickford: Release and Action of Posterior Pituitary Hormones.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Mr. A. K. Monro: Varicose Conditions.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
NOON. (Queen Charlotte's Hospital, Goldhawk Road, W.6.) Prof. A. S. Duncan: Antepartum Hæmorrhage.

ROYAL STATISTICAL SOCIETY
6 P.M. (*Study Circle on Medical Statistics.*) (Westminster Medical School, Horseferry Road, S.W.1.) Dr. L. Bernstein: Teaching of Medical Statistics.

Wednesday, 1st

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Prof. J. N. Davidson: Recent Developments in the Biochemistry of the Nucleic Acids.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Surgery.* Mr. John Bruce, Prof. L. J. Witts, Prof. Ian Aird: Toxic and Nutritional Disturbances in the Small Intestine Associated with Surgery of the Gastro-intestinal Tract.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Histopathology of Fungous Infection.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
5.30 P.M. Prof. F. C. Ormerod: Otogenic Meningitis.

CHADWICK TRUST
5.45 P.M. (Caxton Hall, S.W.1.) Mr. R. W. Raven: National Problems Concerning Cancer. (Malcolm Morris lecture.)

MIDLAND MEDICAL SOCIETY
8.15 P.M. (Birmingham Medical Institute, 154, Great Charles Street, Birmingham, 3.) Sir Heneage Ogilvie: Common Mistakes in Surgical Diagnosis.

LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
4.30 P.M. Sir Charles Dodds, F.R.S.: Thoughts on the Human Menaces—Infection and Cancer. (Florence Blair-Bell lecture.)

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH
8.30 P.M. (18, Nicolson Street.) Dr. J. G. MacLeod: Pulmonary Embolism.

Thursday, 2nd

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5.30 P.M. Mr. David Patey: Diseases of the Parotid Gland.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Mrs. Rosalind Pitt-Rivers, F.R.S.: Thyroid Hormones.

ROYAL SOCIETY OF MEDICINE
5 P.M. *United Services.* Lieut.-Colonel J. P. Baird, Lieut.-Colonel R. J. G. Morrison, Dr. F. Dudley Hart: Ankylosing Spondylitis.
8 P.M. *Neurology.* Dr. P. H. Sandifer: Differential Diagnosis of Flaccid Paralysis. Dr. A. L. Woolf, Mr. Kenneth Till: Pathology of the Lower Motor Neurone in the Light of New Muscle-biopsy Techniques. Dr. P. Bauwens: Electrodiagnosis in Motor-unit Dysfunction.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
4.30 P.M. (Chelsea Hospital for Women.) Prof. J. Young: Pelvic Osteo-arthropathy of Pregnancy.

UNIVERSITY OF EDINBURGH, New Buildings, Teviot Place, Edinburgh
5 P.M. Dr. John Matthews: Vascular Disease and Neuropathy in Diabetes Mellitus. (Honyman Gillespie lecture.)

UNIVERSITY OF ST. ANDREWS, Medical School, Small's Wynd, Dundee
5 P.M. Prof. B. G. Macgraith: Circulation in Acute Disease.

Friday, 3rd

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Mr. W. M. Capper: Side-effects of Gastric and Upper Intestinal Surgery.
4 P.M. Dr. D. A. G. Galton: Chemotherapy of Leukæmia.

ROYAL SOCIETY OF MEDICINE
10.30 A.M. *Otology.* Mr. E. J. Radley Smith, Mr. Norman Crabtree, Mr. I. G. Robin: Intracranial Thrombophlebitis.
2.30 P.M. *Laryngology.* Dr. I. Friedmann, Mr. E. Zwiefach, Mr. E. J. Gilroy Glass: Malignant Granuloma and Scleroma.
5.30 P.M. *Anæsthetics.* Prof. W. R. Spurrell: Carbon Dioxide.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.5
4.30 P.M. Mr. St. J. D. Buxton: Simple Fracture. (Thomas Percy Legg lecture.)

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. T. Brain: Diseases of Children.

WHIPPS CROSS HOSPITAL MEDICAL SOCIETY, Whipps Cross Hospital, E.11
8.30 P.M. Mr. D. Innes-Williams: Intersex in Clinical Practice.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow
5 P.M. Prof. C. F. W. Illingworth: Peptic Ulcer.

Saturday, 4th

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY
11.15 A.M. (Hammersmith Hospital, W.12.) Prof. Ian Donald: Neonatal Asphyxia.

KENT PÆDIATRIC AND CHILD HEALTH SOCIETY
3 P.M. (Farnborough Hospital, Farnborough.) Dr. E. R. Bransby, Dr. A. Maberly, Miss E. Shafto: Enuresis.

Appointments

JAMES, H. W., B.M. Oxfd: part-time venereologist (S.H.M.O.), Wrexham, Powys, and Mawddach H.M.C. area.

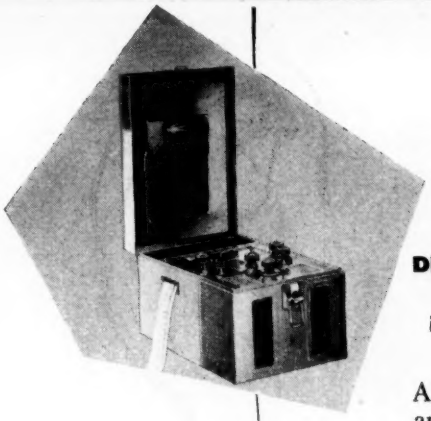
MILLEN, J. L. E., M.D. Belf., D.M.R.T.: consultant radiotherapist, N. Ireland Radiotherapy Centre, Purdysburn, Belfast.

MONRO, I. C., M.D. Edin., D.P.H.: M.O.H. and chief administrative and executive school M.O., Lanarkshire.

REA, ERIC, M.B. Belf., F.R.C.S.E.: casualty officer (S.H.M.O.), Royal Victoria Hospital, Belfast.

WHITTLES, J. H., T.D., M.D. Lond., B.SC., D.P.H.: deputy M.O. and deputy principal school M.O., Wiltshire.

WILLIAMS, G. F. J., M.D. Birm., M.R.C.O.G.: consultant obstetrician and gynæcologist, mid-Wales H.M.C.



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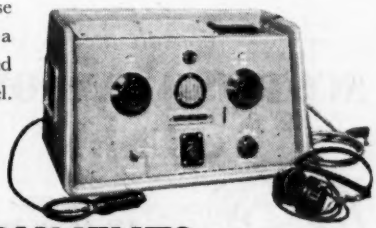

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Academic and Educational

ROYAL COLLEGE OF SURGEONS OF ENGLAND

ANNUAL MEETING OF FELLOWS AND MEMBERS

Notice is hereby given that the Annual Meeting of Fellows and Members will be held at the College in Lincoln's Inn-fields on WEDNESDAY, 8TH DECEMBER, 1954, at 5.30 P.M.

PRELIMINARY AGENDA

1. Presentation of the Annual Report of the Council.

Fellows and Members and other Diplomates of the College can obtain copies of the Report on application to the Secretary, and can, if they so desire, have their names placed on the list of those to whom the Report is sent annually.

2. Report on progress of the rebuilding of the College.

3. Report on the postgraduate educational activities of the College.

Fellows and Members are cordially invited to take part in the discussions.

4. Motions by Fellows or Members.

Motions to be brought forward at the Meeting must be signed by the mover, or by the mover and other Fellows and Members, and must be received by the Secretary not later than 1st December.

A copy of the Agenda will be issued on or after 4th December to any Fellow or Member who may apply for one.

EVENTS ON 8TH DECEMBER, 1954

12–1 P.M. Conducted tour of new buildings of the College.

2–4 P.M. "View Day." There will be exhibits in the Library, Council Room and the Departments of Anatomy, Physiology, Pathology and Ophthalmological Research. The Residential College and the laboratories of the Imperial Cancer Research Fund at No. 48, Lincoln's Inn-fields, will also be open for inspection.

3.30 P.M. Tea.

4–5 P.M. Bradshaw Lecture: Prof. Lambert C. Rogers, V.R.D.

5.30 P.M. Annual Meeting of Fellows and Members.

7 P.M. Monthly subscription dinner.

All day there will be on show recent additions to the Museum. Luncheon will be available at the College.

KENNEDY CASSELS, Secretary.

Lincoln's Inn-fields, London, W.C.2 November, 1954.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

CHARLES EDWARD NEWMAN, M.D., F.R.C.P., will deliver the FITZPATRICK LECTURES on TUESDAY, 7TH DECEMBER, and THURSDAY, 9TH DECEMBER, 1954, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject: "The Evolution of Medical Education in the Nineteenth Century."

Any member of the Medical Profession admitted on presentation of card.

By order of the President,
HAROLD BOLDERO, Registrar.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

GENERAL SURGERY

A 3 months course of post-graduate surgery suitable for surgeons requiring a refresher course in the current outlook on general surgery or for graduates preparing to specialise in surgery, starts on 21ST MARCH and 26TH SEPTEMBER, 1955. The programme has been reorganised so as to provide coördinated clinical and systematic instruction in general surgery wards and specialised surgical units in Edinburgh. Fee £31 10s.

MEDICAL SCIENCES

A 3 months course in applied anatomy, physiology, pathology, bacteriology and biochemistry will begin on 27TH JUNE, 1955. This course is suitable for post-graduates wishing to take the Primary Fellowship Examination, as a final preparation in these subjects. Considerable basic knowledge is highly desirable prior to taking this course. Fee £31 10s.

2 courses in the Basic Sciences (anatomy, physiology, pathology, including bacteriology) will be conducted by the Fellows of the Royal College of Surgeons and others, under the ægis of the Edinburgh Post-Graduate Board for Medicine. These courses, comprising lectures and demonstrations, will begin on 14TH FEBRUARY and 24TH OCTOBER, 1955, and continue for 10 weeks. Fee £26 5s.

INTERNAL MEDICINE

Courses lasting 12 weeks, suitable for graduates wishing a refresher course, or to specialise in medicine, begin on 28TH MARCH and 26TH SEPTEMBER, 1955. These courses consist of 320 hours instruction, comprising lectures, clinical demonstrations and ward visits. Fee £31 10s.

Additional instruction in clinical pædiatrics is arranged in conjunction with the course in medicine for which there is a small fee; the numbers are limited.

Applications for enrolment should be addressed to the Director of Post-Graduate Studies, Surgeons' Hall, Edinburgh, 8, supplying particulars of qualifications and post-graduate experience.

UNIVERSITY OF OXFORD

RADCLIFFE TRAVELLING FELLOWSHIP, 1955

An Examination for a Fellowship of the annual value of £300, tenable for 2 years, will be held at the University Museum on 12TH FEBRUARY, 1955. Candidates must have passed all the examinations for the Degree of Bachelor of Arts and Bachelor of Medicine, and must not have exceeded 4 years (exclusive of national service) from the time of passing the last examination for the Degree of Bachelor of Medicine.

The examination will take the form of a self-chosen essay and an interview. Further particulars to be obtained from the Deputy Regius Professor of Medicine, University Museum, Oxford.

All applications, with essays, must be sent in by 31st January, 1955.

UNIVERSITY OF ABERDEEN

RESEARCH FELLOWSHIP IN HÆMATOLOGY

Applications invited for Research Fellowship in Hæmatology in Department of Medicine. Appointment for 3 years. Salary within range £600–£800 with initial placing according to qualifications and experience. Superannuation (F.S.S.U.), children's allowances. Part removal expenses repaid.

Applications (2 copies) not later than 6th December to the undersigned, from whom forms of application and conditions of appointment may be obtained.

The University of Aberdeen. W. S. ANGUS, Secretary.

BRITISH POSTGRADUATE MEDICAL FEDERATION

(UNIVERSITY OF LONDON)
INSTITUTE OF CARDIOLOGY
35, Wimpole-street, W.1

SPECIAL COURSE FOR CONSULTANTS to be held at the National Heart Hospital, Westmoreland-street, W.1, from 24TH to 28TH JANUARY, 1955.

Monday, 24th January

9.30 A.M.	Special Methods of Investigation	Dr. PAUL WOOD
11.15 A.M.	Ward Round	Dr. EVAN BEDFORD Dr. WALLACE BRIGDEN
2 P.M.	Outpatient Clinical Discussion	Dr. GRAHAM HAYWARD

Tuesday, 25th January

9.30 A.M.	Auscultation and Phonocardiography	Dr. AUBREY LEATHAM
11.15 A.M.	Panel Discussion: Hypertension	Sir FRANCIS FRASER (Chairman) Dr. MAURICE CAMPBELL Dr. WILLIAM EVANS Dr. WALLACE BRIGDEN Dr. AUBREY LEATHAM
2 P.M.	Outpatient Clinical Discussion	Dr. PAUL WOOD

Wednesday, 26th January

9.30 A.M.	Electrocardiography	Dr. WALLACE BRIGDEN
11 A.M.	Ward Round	Dr. WILLIAM EVANS Dr. GRAHAM HAYWARD
2 P.M.	Outpatient Clinical Discussion	Dr. MAURICE CAMPBELL

Thursday, 27th January

9.30 A.M.	Congenital Heart Disease	Dr. MAURICE CAMPBELL
11.15 A.M.	Panel Discussion: Surgery of Rheumatic Heart Disease	Sir JOHN PARKINSON (Chairman) Sir RUSSELL BROCK Dr. EVAN BEDFORD Dr. PAUL WOOD Dr. GRAHAM HAYWARD
2 P.M.	Outpatient Clinical Discussion	Dr. EVAN BEDFORD

Friday, 28th January

9.30 A.M.	General Discussion	
11 A.M.	Clinico-Pathological Conference	Dr. REGINALD HUDSON
2 P.M.	Outpatient Clinical Discussion	Dr. WILLIAM EVANS

There is no fee for this course.

Applications should be sent to the Dean, Institute of Cardiology, 35, Wimpole-street, W.1.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 6th DECEMBER, 1954. The following Examination will be held in July, 1955.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

SOUTH AFRICAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

BURSARY FOR RESEARCH INTO CAUSES OF ANÆSTHETIC DEATHS

Applications are invited from medically qualified persons for a bursary of £1200 to undertake full-time research into the causes of anæsthetic deaths. Transport and subsistence will be provided when necessary. Bursary is initially for 1 year, but may be renewed for a further 2 years. The bursar will work mainly in Pretoria and Johannesburg. Experience in anæsthetics and/or pathology will be a recommendation.

Applications, giving full information, including publications or previous research work, to reach Secretary/Treasurer, C.S.I.R., P.O. Box 395, Pretoria, by 15th January, 1955.

ROYAL FREE HOSPITAL. Applications are invited for the post of RESEARCH SCHOLAR IN CLINICAL CHEMICAL PATHOLOGY. Candidates must be medically qualified and have held clinical appointments: previous experience of laboratory work would be an advantage. The appointment is for 1 year in the first instance, at a salary of £750 p.a., and is to begin as soon as possible after 1st January, 1955.

Applications, accompanied by the names of 2 referees, should be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1 (from whom further particulars can be obtained) by 20th December, 1954.

ST. MARY'S HOSPITAL MEDICAL SCHOOL (University OF LONDON), Paddington, W.2. PÆDIATRIC UNIT. Applications are invited for the appointment of JUNIOR LECTURER for a period of 3 years. The duties will be primarily research with some teaching and clinical work. Opportunities for training in metabolic studies and microchemical methods will be available in the Pædiatric Unit Laboratory and in the Department of Chemical Pathology. Salary within the range £900–£100–£1100, together with superannuation under the F.S.S.U. and children's allowance.

Applications (2 copies), together with the names of 3 referees, should be sent before 31st December to the Secretary, from whom further particulars may be obtained.

GUY'S HOSPITAL MEDICAL SCHOOL. Applications are invited for the appointment of JUNIOR LECTURER IN PHARMACOLOGY. Duties to commence as soon as possible. Applications would also be considered from those holding a Degree in Chemistry who wish to gain training in pharmacology. Salary on the scale £600–£750 with superannuation and family allowances.

Forms of application are obtainable from, and should be lodged with, the Dean, Guy's Hospital Medical School, S.E.1, not later than 3rd December, 1954.

GUY'S HOSPITAL MEDICAL SCHOOL. Applications are invited for an appointment of RESEARCH FELLOW to assist Dr. P. A. Gorer with work on the serological study of transplantation immunity. Appointment to begin in February, 1955, for 1 year in the first instance, extendible up to 3 years. Salary normally on Junior Registrar or Junior Lecturer scale.

Applications, with names of 3 referees, should be sent to the Dean, Guy's Hospital Medical School, London Bridge, S.E.1.

MENTAL HEALTH RESEARCH FUND FELLOWSHIP. Applications are invited for the post of MENTAL HEALTH RESEARCH FUND FELLOW from suitably qualified persons wishing to pursue full-time research work bearing on problems of mental health, whether in clinical psychiatry or in 1 of its supporting sciences. The appointment is for 2 years in the first instance renewable for a maximum of 1 year thereafter. Salary in the range of £1000–£1500.

Further information from the Hon. Secretary, Mental Health Research Fund, 39, Queen Anne-street, London, W.1.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for a NUFFIELD RESEARCH FELLOWSHIP IN RHEUMATIC DISEASES tenable in the Sheffield Centre for the Investigation and Treatment of Rheumatic Diseases. Stipend in the range £1000–£1500 with annual increments of £100 to £1500. Existing superannuation provision under F.S.S.U. or National Health Service scheme will be continued. Normal tenure will be 3 years renewable for 2 further years.

Applications (6 copies) should reach the Registrar (from whom further particulars should be obtained) not later than 31st December, 1954.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for a post of LECTURER IN PATHOLOGY to begin duties as soon as possible. Salary scale £700–£100–£1500, with F.S.S.U. provision and family allowance. Initial salary according to qualifications and experience.

Further particulars should be obtained from the Registrar to whom applications (10 copies) should be sent by 11th December, 1954.

UNIVERSITY OF GLASGOW. Applications are invited for a SENIOR LECTURESHIP IN PATHOLOGY within the University Department at the Western Infirmary. The Senior Lecturer to be appointed will have an honorary contract with the Regional Board and will be graded as Consultant. The salary will be on the University scale for Clinical Lecturers, the maximum of which is £2000–£2500. F.S.S.U. and family allowance benefits. The successful candidate will be responsible for the routine hæmatological investigation of disorders of the blood and will control the Hospital Blood Transfusion Service from the Pathology Department of the University and Western Infirmary. An adequate training in morbid anatomy and histology is essential.

Applications (16 copies), including the names of 3 referees, should be lodged, not later than 18th December, 1954, with the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of University Court.

UNIVERSITY OF ABERDEEN. Applications invited for the post of Full-time LECTURER IN MIDWIFERY AND GYNÆCOLOGY in the University of Aberdeen, with an honorary appointment as Consultant to the North Eastern Regional Hospital Board (Scotland). Salary on scale £1400–£2000, or on corresponding new scale, with initial placing according to qualifications and experience. Superannuation (F.S.S.U.) and children's allowance. Part of removal expenses may be refunded.

Applications (14 copies) should be lodged not later than 28th December, 1954, with the undersigned, from whom forms of application and conditions of appointment should be obtained. Applicants outside the British Isles may submit 1 copy only.

The University of Aberdeen. W. S. ANGUS, Secretary.

CAIRO UNIVERSITY. Faculty of Medicine, Kasr El AINI, CAIRO. Applications are invited for the vacant Whole-time CHAIR OF MATERIA MEDICA at the School of Pharmacy, Kasr El Aini Medical Faculty, Cairo. Candidates should be in possession of a degree in pharmacy from a recognised University as well as a higher university qualification in materia medica. Preference is given to applicants who have been qualified for at least 14 years and have a teaching experience in a university or a recognised institute for not less than 8 years. It is stipulated that the English language is the one to be used in teaching. Salary offered amounts to about £E.1400 inclusive; income-tax will be deducted from the above sum amounting to about 5%. Travelling expenses for the candidate and his family to this country and back at the end of the contract will be paid by this University on presentation of bills. 2 months leave are granted annually. The period of the contract is 2 years, renewable by mutual agreement.

Applications with credentials, publications, &c., should reach the Dean, Kasr El Aini Medical Faculty, Cairo, not later than 16th December, 1954. Applications received after this date are not considered.

Hospital Services: Senior Appointments

CHARING CROSS HOSPITAL, W.C.2. First Assistant (non-resident) in the Radiotherapy Department. Tenable for 1 year. Salary within the scale £1400–£1950 p.a.

Further particulars and application forms (to be returned by 13th December, 1954) obtainable from the undersigned.

FRANK HART, Secretary to the Board.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) **West Middlesex Hospital and Mount Vernon Centre for Plastic Surgery**

CONSULTANT in Plastic Surgery (part-time) for 9 half-days a week at West Middlesex Hospital, Isleworth (1143 Beds) and the Regional Centre for Plastic Surgery and Jaw Injuries, Mount Vernon Hospital, Northwood. Duties mainly at West Middlesex Hospital. Applicants should have had at least 4 years postgraduate experience in surgery and, in addition, at least 4 years training in a centre handling all types of plastic surgery is essential.

Applications by 30th December, 1954.

(2) CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST (whole-time or 9 half-days a week) at Whittington Hospital, Highgate (1314 Beds), including duties at New End Hospital, Hampstead, N.W.3 (242 Beds). Post vacant 1st May, 1955.

Applications by 28th December, 1954.

(3) CONSULTANT PSYCHIATRIST (part-time) 2 half-days a week at St. Marylebone Hospital, 48, Cosway-street, N.W.1. Applicants should have had considerable psychiatric experience and hold an appropriate higher qualification.

Applications by 4th January, 1955.

(4) CONSULTANT PSYCHIATRIST (whole-time), Hill End Hospital, St. Albans, Herts (790 Beds).

Applications by 17th December, 1954.

Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11a, Portland-place, W.1.

ST. MARY'S HOSPITAL MEDICAL SCHOOL (University of London), Paddington, W.2. Applications are invited for the appointment of Full-time ASSISTANT DIRECTOR of the Surgical Unit for an initial period of 3 years. Salary £1250–£100–£1750 together with children's allowance and superannuation under the F.S.S.U.

Applications (2 copies), with names of 3 referees, should be submitted by 11th December to the Secretary, from whom further particulars may be obtained.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT RADIOLOGIST (2 half-days per week) for the Battersea and Putney Group. Duties mainly at Battersea General Hospital, S.W.11.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11a, Portland-place, W.1, by 23rd December, 1954. Applicants may visit Hospitals by local arrangement.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will shortly be a vacancy for an ASSISTANT MORBID ANATOMIST (Senior Hospital Medical Officer) to undertake routine and research work in the Department of Morbid Anatomy. The appointment is whole-time.

Further particulars and form of application, which must be returned not later than Thursday, 23rd December, 1954, may be obtained from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. The Board of Governors invite applications for the appointment of ORTHOPÆDIC SURGEON from Fellows of the Royal College of Surgeons of England.

Further particulars and form of application, which must be returned not later than Thursday, 23rd December, 1954, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT SURGEON (whole-time or maximum part-time), Newmarket General Hospital (330 Beds). Duties will include sessions at West Suffolk General Hospital, Bury St. Edmunds. Successful candidate will be required to reside in the vicinity of Newmarket.

Applications (8 copies), stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 13th December, 1954. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, Newmarket General Hospital.

LEEDS REGIONAL HOSPITAL BOARD.

Part-time CONSULTANT ANÆSTHETIST (9 sessions per week) for duties at hospitals in Pontefract and Goole, the person appointed to reside in Pontefract.

Whole-time CONSULTANT PSYCHIATRIST AND DEPUTY PHYSICIAN-SUPERINTENDENT for duties at Stanley Royd Hospital, Wakefield (2100 Beds). The successful candidate will have extramural duties at general hospitals in the Wakefield and Dewsbury areas. Married accommodation with garden is available adjacent to the Hospital. Candidates should hold high qualifications in medicine and psychiatry, and have had experience of administrative aspects of the specialty.

Whole-time ASSISTANT CHEST PHYSICIAN AND DEPUTY MEDICAL SUPERINTENDENT (Senior Hospital Medical Officer scale) at The Hospital, Grassington, near Skipton (208 Beds). Accommodation available for a single person.

Whole-time ASSISTANT RADIOLOGISTS (Senior Hospital Medical Officer scale) for duties in the following areas:—

(*a*) Leeds A and B Groups.

(*b*) Huddersfield and Halifax Groups.

Applicants should have had wide experience in radiology, and the possession of the D.M.R. is essential. The successful candidates will work under the general guidance of the Consultant in charge of the respective departments, and will be required to reside in Leeds, and Huddersfield/Halifax respectively.

Applications for the above appointments (12 copies), stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 18th December, 1954.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens ANÆSTHETIST in the Consultant or Senior Hospital Medical Officer grades required immediately for approximately 2 months for duties at hospitals in the York A and Tadcaster Group.

Applications, stating age, qualifications, and details of previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary to the Board, Park-parade, Harrogate.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Additional Part-time (8 half-days weekly) CONSULTANT SURGEON at Crumpsall Hospital, Manchester (General, 1237 Beds; general surgical, 120). Wide experience, F.R.C.S. essential; appointee to live in area. 6th December, 1954.

(*b*) Whole-time ASSISTANT RADIOLOGIST (Senior Hospital Medical Officer) to the Blackburn and District Hospitals (Blackburn Royal Infirmary, Queen's Park Hospital, Accrington Victoria Hospital, &c.). D.M.R.D. and wide experience essential. 6th December, 1954.

(*c*) Whole-time, NON-RESIDENT SENIOR CASUALTY OFFICER to the Bury and Rossendale Hospital Centre, with main duties at the Bury General Hospital, subject to general supervision of Consultants. Tenure of post limited to 4 years; salary within range £1500–£50–£1950 (according to experience, &c.). 13th December, 1954.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) Full-time CONSULTANT PATHOLOGIST with special knowledge of blood-transfusion serology required as Director of Blood Transfusion Centre to be opened at Brentwood, Essex, early in 1955. Further particulars on application from Secretary, Regional Hospital Board. Residence in the area is a condition of the appointment.

(2) Full-time CONSULTANT PATHOLOGIST, Tilbury and South-East Essex Group of hospitals. Special experience in morbid anatomy required. Residence in the area is a condition of the appointment.

(3) Full-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer grade), Group Laboratory, Southend-on-Sea Hospital, Essex. Duties will include clinical pathology, hæmatology, and bacteriology. Residence in the area is a condition of appointment.

Applications (6 copies), stating post concerned, and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 11th December, 1954.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the whole-time post of ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer) at Littlemore Hospital, Oxford. Applicants must hold the D.P.M. or its equivalent and had experience in psychiatry. Married accommodation is available.

Applications (12 copies), stating age, experience, and names and addresses of 3 referees, should reach the Secretary to the Board, 43 Banbury-road, Oxford, by 17th December. The Hospital may be visited by direct appointment with the Physician-Superintendent from whom further details may be obtained.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of CONSULTANT GYNÆCOLOGIST for the Professorial Unit at the Western Infirmary, Glasgow. The appointment is part-time, and will be remunerated on the basis of 4 half-days per week. The question of a related obstetrical appointment for the individual selected will be determined in the light of circumstances. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time appointment of ANÆSTHETIST (Consultant grade) to the West Fife Group of hospitals. The principal duties will be in the Dunfermline and West Fife Hospital. The post is superannuable and the conditions of service are in accordance with National Health Service regulations.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 18th December, 1954.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST for the Croydon (Surrey) Group. Duties mainly at Mayday Hospital and St. Mary's Maternity Hospital.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 23rd December, 1954. Applicants may visit hospitals by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time (Assistant) CONSULTANT SURGEON (6 half-days per week) for the Kingston (Surrey) Group. Duties, mainly at Kingston Hospital, will include proportion of surgical emergency work. Residence within easy access of Hospital required.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 23rd December, 1954. Applicants may visit hospitals by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade) at the Cassel Hospital (for functional nervous disorders), Richmond, Surrey. Candidates should possess D.P.M. and must have particular interest and experience in psycho-analysis.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 18th December, 1954. Applicants may visit Hospital by local arrangement.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT PLASTIC SURGEON with duties at Nottingham and Derby. The main centre will be at Nottingham where a unit of 24 beds is being established at the City Hospital.

Further details and application form from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 18th December, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT RADIOLOGIST for Leicester Royal Infirmary and Leicester General Hospital. The successful candidate will work under the direction of the Consultant Radiologist-in-charge and will be required to reside within 10 miles of Leicester Royal Infirmary. Candidates should possess a Diploma in Radiology. Salary scale £1500–£50–£1950.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, 10. Forms to be returned by 24th December, 1954.

NEW ZEALAND. PALMERSTON NORTH HOSPITAL. Applications are invited for the position of PHYSICIAN at the above Hospital—a General Hospital of some 400 Beds. The position is whole time and includes charge of general medical and chest beds and the duties of Assistant Medical Superintendent. Salary is covered by the New Zealand Hospital Employment Regulations, 1952, and amendments, and is subject to grading. Applicants should be eligible for Junior or Senior Specialist status under these regulations. The salary for a Junior Specialist is £1352 rising to £1652 by increments of £50. The salary for Senior Specialist is subject to grading, the probable commencing salary will be within the range £1752–£2002, according to experience and qualifications. Conditions of appointment and full details of salary and grading procedure are available on application to the New Zealand High Commissioner, 415, Strand, London, W.C.2.

Applicants must give details of nationality, sex, age, qualifications and experience, and include 3 testimonials from medical referees. The closing date for applications has been extended and now closes on 10th January, 1955. Applications should be addressed to the Medical Superintendent, P.O. Box 607, Palmerston North, New Zealand.

SOUTH AFRICA. WESTERN PROVINCE BLOOD TRANSFUSION SERVICE. Applications are invited from medical practitioners (registered or registrable with the South African Medical and Dental Council) for the post of MEDICAL DIRECTOR (Pathologist) to the Western Province Blood Transfusion Service at a salary of £2500 p.a. (inclusive). The duties attaching to the post will consist of the expansion of the existing Blood Transfusion Service and the establishment of the necessary laboratory services. Applicants should have adequate experience in all branches of blood-transfusion work with special reference to laboratory work. The appointment will, in the first instance, be for a trial period of 1 year, with a definite contract of 5 years thereafter; the terms of the contract being subject to review after that period. The Medical Director will, however, be entitled to give 6 months notice of termination of contract at any time after completion of the first year of the contract period.

Applications, together with full particulars, should be submitted to the Secretary, Western Province Blood Transfusion Service, P.O. Box 3788, Cape Town, to reach him not later than 31st December, 1954.

Hospital Services: Junior Appointments

BROMPTON HOSPITAL, S.W.3. Applications invited for the following posts:—

NON-RESIDENT SURGICAL OFFICER (post graded as Senior House Officer or Registrar, according to qualifications and experience), for which there are 2 vacancies, for 6 months from 1st February, 1955, with eligibility for reappointment. Candidates must have held a resident hospital appointment.

RESIDENT HOUSE PHYSICIAN for which there are 3 vacancies, for 6 months from 1st February, 1955. Duties include work in Outpatient Department and wards. Salary £475 or £525 a year according to experience.

RESIDENT HOUSE PHYSICIAN at the Sanatorium at Frimley, for 6 months from 1st February, 1955. Salary £475 or £525 a year according to experience.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 4th December, to—

KENNETH A. F. MILES, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) required General Medical Department including hæmatology and endocrinology, for 1 year in first instance. Successful candidate will also have opportunity of working on another medical firm specialising in gastro-enterology if appointment renewed for further year. Duties will include undergraduate teaching. Non-resident except when on duty. Hospital may be visited by appointment.

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 8th December, 1954.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (whole-time) required. Resident when on duty. *Will include outpatient sessions and teaching.* Hospital may be visited by appointment.

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 4th December, 1954.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR *in the E.N.T. Department.* Whole-time, non-resident appointment for 1 year in first instance under supervision of visiting Consultant. Previous operative experience desirable. Appointment is approved for F.R.C.S.(Eng.). Candidates are welcome to visit the Hospital by direct appointment with the Medical Director.

Application forms obtainable from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 8th December, 1954.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from registered Women medical practitioners for the post of Full-time SURGICAL REGISTRAR (non-resident). Recognised for the F.R.C.S. examination. Appointment for 1 year in the first instance, to commence 1st February, 1955. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 3rd December, 1954.

HACKNEY HOSPITAL, London, E.9. (842 Beds.) Applications are invited for the following 6-month HOUSE PHYSICIAN posts :—

(*a*) Pre-registration first post, 18th December (2 vacancies).
(*b*) Pre-registration second post, 18th December.

Applications should be sent to the Group Secretary at the above address by 1st December, quoting HH/HP.

HACKNEY HOSPITAL, London, E.9. (842 Beds.) Applications for appointment of Pre-registration HOUSE SURGEON for 6 months from 18th December, should be sent to the Group Secretary at above address by 1st December, quoting HH/HS. Post recognised for F.R.C.S.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. (ROYAL FREE HOSPITAL GROUP.) Applications are invited for the following pre-registration posts :—

HOUSE PHYSICIAN (pædiatric and general medical duties)
HOUSE SURGEON.
NON-RESIDENT CASUALTY OFFICER.

All vacant 1st January, 1955, and tenable for a period of 6 months.

Application forms may be obtained from the Administrative Officer, to whom they should be returned, together with 3 recent testimonials, by 1st December, 1954.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. Whole-time, NON-RESIDENT REGISTRAR (general medicine) required 1st January.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, by 6th December.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, London, N.21. ANÆSTHETIST (House Officer grade), resident. 100 active surgical and orthopædic beds, approximately 1200 operations annually.

Applications, with copies of 3 testimonials, to Hospital Secretary.

LAMBETH HOSPITAL, Brook-drive, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the position of RESIDENT HOUSE PHYSICIAN, vacant 1st January, 1955.

Application forms from the Physician-Superintendent.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. A vacancy occurs for Part-time REGISTRAR (Registrar grade) E.N.T. Department, to attend up to 2 sessions a week (Tuesday afternoon and Wednesday morning). The appointment is for 1 year in the first instance.

Applications, stating date of birth, qualifications with dates and previous appointments held, with copies of 3 testimonials, should be sent at once to—

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

MILDMAY MISSION HOSPITAL, Austin-street, Bethnal Green, E.2. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (resident). Recognised for the F.R.C.S. Vacant 1st January, 1955. The appointment is for 1 year. Salary £745 p.a., less residential charges. Candidates should be in full sympathy with the evangelistic aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of REGISTRAR (Accident Officer) in the Orthopædic Department, vacant 1st January. Appointment for 1 year at the Middlesex Hospital and a second year at the Luton and Dunstable Hospital under the control of the North West Metropolitan Regional Hospital Board.

Forms of application, obtainable from the Deputy Superintendent, should be returned, naming 2 referees, by 11th December.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—147 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER (casualty), vacant February, 1955 (recognised F.R.C.S. post).

Applications, stating age, nationality, qualifications and experience, together with testimonials, to the Hospital Secretary by 7th December, 1954.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—147 Beds.) Applications are invited for the pre-registration posts of 2 HOUSE PHYSICIANS and 3 HOUSE SURGEONS (recognised for F.R.C.S.), vacant January, 1955.

Applications, stating age, nationality, qualifications or probable date of qualification, and experience, with copies of 3 testimonials, to the Hospital Secretary by 7th December, 1954.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—147 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT *SENIOR HOUSE OFFICER (Anæsthetist)*, vacant January, 1955.

Applications, stating age, nationality, qualifications, and experience, together with testimonials, to the Hospital Secretary by 7th December, 1954.

MOORFIELDS, WESTMINSTER AND CENTRAL EYE HOSPITAL (MOORFIELDS BRANCH), City-road, London, E.C.1. Applications are invited for the post of SIXTH HOUSE SURGEON (Registrar), non-resident. The appointment is for a period of 4 months from 1st March, 1955, and the holder of the post at the completion of that time will be eligible for appointment as Fifth, Fourth, Third, Second, and subsequently as Senior Resident Officer for similar periods.

Applications should be submitted on the official form, obtainable from the undersigned, stating age and qualifications, together with testimonials and photograph, and be received not later than 11th December, 1954.

A. J. M. TARRANT, House Governor.

NATIONAL HEART HOSPITAL, Westmoreland-street, London, W.1. (With which is associated the Institute of Cardiology.) Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (Male). The appointment is for a period of 6 months from 1st January, 1955. The status of the post is that of a Senior House Officer and the salary is £745 p.a., in accordance with the terms and conditions of service of hospital medical staff.

Applications, with copies of 3 recent testimonials, should be sent to me not later than Saturday, 4th December, 1954.

ROBERT G. E. WHITNEY, Secretary to the Board.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of PSYCHIATRIC REGISTRAR (non-resident) at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. The appointment will be for a period of 1 year in the first instance.

Applications, giving the names of 3 referees, to be sent to the undersigned not later than 1st December, 1954.

H. EWART MITCHELL, Secretary to the Board of Governors.
The National Hospitals for Nervous Diseases,
Queen-square, W.C.1.

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD.

(1) ANÆSTHETIC REGISTRAR (resident), Chelmsford and Essex and St. John's Hospitals. Recognised for D.A.
(2) ANÆSTHETIC REGISTRAR (resident), St. Margaret's Hospital, Epping. Recognised for D.A.
(3) ANÆSTHETIC REGISTRAR (resident in hospital or nearby), St. Andrew's Hospital, Billericay, Essex.
(4) SURGICAL REGISTRAR (non-resident but accommodation available at another hospital), Prince of Wales's General Hospital, Tottenham, N.15, and other hospitals in Tottenham Group. Recognised for F.R.C.S.
(5) SURGICAL REGISTRAR (resident), Tilbury and Riverside General Hospital. Recognised for F.R.C.S.
(6) REGISTRAR in Pathology (non-resident), Group Laboratory, Mile End Hospital, E.1 (experience in morbid anatomy, histology and hæmatology desirable). Recognised for D.C.P.
(7) REGISTRAR in Diseases of the Chest (resident in hospital —cottage available—or nearby), Harold Court Hospital and Brentwood Chest Clinic, Essex.
(8) REGISTRAR in Psychiatry (resident, if single—House available if married), Warley Hospital, Brentwood, Essex.
(9) REGISTRAR in Psychiatry (resident or non-resident), Severalls Hospital, Colchester, Essex.

Appointments subject to review after 1 year.

Separate applications in duplicate, with 2 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 11th December, 1954.

PADDINGTON GENERAL HOSPITAL, Harrow-road, W.9. (564 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty) resident on duty (1 of 3), commencing 1st January, 1955. Recognised for F.R.C.S.

Applications, stating age, experience, qualifications, together with names and addresses of 2 referees, to be sent to Secretary to Committee by 6th December, 1954.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. HOUSE OFFICERS (2). 1 of these appointments will be made for 2 consecutive periods of 6 months commencing 1st February, 1955. First period as House Physician and second as House Surgeon and Casualty Officer. The other appointment will be for 6 months only as House Physician from 1st February, 1955.

Application forms may be obtained from the Secretary at Hackney-road and should be returned with copies of not more than 3 testimonials on or before 14th December, 1954.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. SENIOR CASUALTY OFFICER (Male or Female ; Senior House Officer grade) for 12 months commencing 21st December, 1954. Post recognised for the F.R.C.S.—i.e., 6 months as casualty and 6 months as general surgery.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 10th December, 1954.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. HOUSE PHYSICIAN (Male or Female; pre-registration post) for 6 months commencing 7th January, 1955.

Applications, with copies of testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 10th December, 1954.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. JUNIOR CASUALTY OFFICER (Male or Female), House Officer third post, for 6 months commencing as soon as possible.

Applications, with copies of testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 3rd December, 1954.

ROYAL FREE HOSPITAL GROUP. Applications are invited from registered Men and Women medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER in Pathology for work at the Royal Free Hospital and within the Group. Previous experience in a pathology appointment is desirable. The appointment is for 6 months in the first instance, subject to reappointment for a further 6 months. Salary in accordance with Ministry of Health scale for Senior House Officers. Duties to commence on 1st January 1955.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 8th December, 1954.

ROYAL LONDON HOMŒOPATHIC HOSPITAL, W.C.1. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR required at above Hospital. Whole-time, non-resident. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Royal London Homœopathic Hospital Management Committee, Great Ormond-street, W.C.1, by 31st December, 1954.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. RESIDENT HOUSE SURGEON (second or subsequent post). Applications are invited for a 6 months appointment as from 19th December, 1954, with salary and conditions as laid down for House Officers in the terms and conditions of service in the National Health Service.

Applications, stating age, qualifications, full details of previous experience (particularly in this specialty), with copies of 1–3 recent testimonials, should be sent to the House Governor immediately.

ST. ANDREW'S HOSPITAL, Bow, E.3. Applications are invited for the post of HOUSE SURGEON to the Obstetric and Gynæcological Department (recognised pre-registration post), vacant on 1st December. Post is tenable for 6 months.

Applications, stating age and qualifications, with copies of at least 1 testimonial, should be sent immediately to the Medical Superintendent, St. Andrew's Hospital, Bow, E.3.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Lisle-street, Leicester-square, London, W.C.2. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER for Inpatient Department.

Inquiries and applications, with the names of 2 referees, by 31st December, 1954, to Secretary.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Whole-time SENIOR REGISTRAR to the Orthopædic Department of St. Mary's Hospital. Higher qualification essential. The appointment will be for a first period of 12 months, the holder being eligible for reappointment. The successful candidate will be expected to take up his duties as soon as possible.

Applications, stating nationality, date of birth, permanent address, qualifications with details of previous and present appointments, showing National Health Service gradings and dates, and names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 14th December, 1954.

ST. GILES HOSPITAL, Camberwell, S.E.5. Applications invited for the following HOUSE OFFICER appointments:—

(1) General medical duties.
(2) Surgical duties.
(3) Orthopædic duties.

Recognised pre-registration posts, vacant from 1st January, 1955.

Applications, showing age and details of qualifications and previous posts (if any), with copy testimonials or names of referees, to reach the Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22, by 10th December, 1954.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of MEDICAL REGISTRAR for 1 year in first instance from 1st January, 1955.

Applications (5 copies), with names of 2 referees, to House Governor by 11th December.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of SENIOR REGISTRAR to Anæsthetics Department for 1 year in first instance from 8th February, 1955. Candidates should hold D.A.

Applications (10 copies), with names of 2 referees, to House Governor by 11th December.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of RESIDENT HOUSE SURGEON to the E.N.T. Department, to commence on 1st January, 1955, for a period of 6 months. This is a post-registration House appointment.

Applications, together with copies of 2 testimonials, should be submitted to the undersigned within 10 days of the appearance of this advertisement.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of RESIDENT HOUSE OFFICER in the Department of Anæsthesia to commence on 1st January, 1955, for a period of 6 months. This is a post-registration House appointment.

Applications, with copies of 2 testimonials, should be submitted to the undersigned within 10 days of the appearance of this advertisement.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House PHYSICIAN (resident) for duty in Rheumatism Unit. Vacancy early January. This post offers valuable experience in the study of rheumatic diseases as well as general medicine.

Applications, naming 2 referees, to be sent to Medical Superintendent not later than 10th December, 1954.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. WOODEND GENERAL HOSPITAL (GLENBURN WING). (160 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER in Geriatrics at the above Hospital, to commence duty at the beginning of January. The appointment, which is resident, is subject to the conditions of service issued by the Department of Health for Scotland.

Applications, with the names of 2 referees, should be lodged with the Secretary, Aberdeen General Hospitals, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

BEDFORD GENERAL HOSPITAL. (437 Beds.) 3 RESIDENT HOUSE SURGEONS (pre-registration) required in December and January. The appointments offer exceptional opportunity for general experience in a busy acute Surgical Unit.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 recent testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEXHILL HOSPITAL, Bexhill. (62 Beds.) 2 House SURGEONS. Posts now vacant. A small modern hospital on the South Coast, considerable acute surgical work and busy Outpatient Department, excellent all-round experience. National scale of salary.

Apply to Hospital Administrator.

BLACKBURN AND DISTRICT HOSPITAL MANAGE- MENT COMMITTEE. Applications are invited for the following posts which fall vacant about the beginning of January, 1955:—

Victoria Hospital, Accrington (112 acute beds)
SENIOR HOUSE OFFICER (medicine) and HOUSE PHYSICIAN.

Queen's Park Hospital, Blackburn (644 general)
2 HOUSE PHYSICIANS.

Royal Infirmary, Blackburn (262 acute beds)
HOUSE PHYSICIAN and HOUSE SURGEON.

All House Officer posts recognised for pre-registration purposes. House Surgeon post recognised for F.R.C.S.

Apply to Secretary of the Committee, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (1059 Beds.) Applications are invited for the following posts:—

3 HOUSE PHYSICIANS. Available January.

1 HOUSE PHYSICIAN (pædiatrics). Recognised for D.C.H. (Some duties at Moseley Hall Hospital for Children.) Available January.

3 HOUSE SURGEONS. Recognised for F.R.C.S. Available January.

2 HOUSE SURGEONS (gynæcological and obstetrical). Recognised for M.R.C.O.G. Available January and February.

All the above posts are recognised for Pre-registration Service. Salary in accordance with the national scale for House Officers and the appointments tenable for 6 months.

Apply to the Medical Superintendent, giving qualifications, age, and experience, and enclosing copies of 3 testimonials.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL. HOUSE OFFICER (casualty) required to commence duty on 7th January, 1955, for 6 months. Recognised for pre-registration candidates but registered practitioners may apply.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 11th December, 1954.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of RESIDENT OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR for duties at the Queen Elizabeth Hospital and The Birmingham and Midland Hospital for Women (Professorial Unit) to commence January, 1955.

Forms of application with details of appointment may be obtained from, and should be returned not later than 13th December, 1954, to, the House Governor, Birmingham and Midland Hospitals for Women, Showell Green-lane, Birmingham, 11.

G. A. PHALP, Secretary and Principal Administrative Officer.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, BIRMINGHAM, 3. (156 Beds.) SENIOR HOUSE OFFICER required. Experience in ophthalmology essential.

Detailed applications, with names of 2 referees, to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM ACCIDENT HOSPITAL, BIRMINGHAM, 15. (215 Beds.) Applications are invited from registered practitioners for the post of RESIDENT SURGICAL OFFICER (Senior House Officer grade) vacant in December. The Hospital is the largest Traumatic Unit in the country, and treats 50,000 new patients each year. The post offers ample opportunity for practical experience in the management of all types of injury and teaching by the Consultant staff.

Applications to Administrator.

BIRMINGHAM ACCIDENT HOSPITAL, Birmingham, 15. (215 Beds.) RESIDENT HOUSE SURGEONS (Male or Female). 3 posts vacant December, including 2 for Pre-registration Service. Posts are recognised by the Royal College of Surgeons for the casualty surgery training, now compulsory for the Fellowship examinations. Appointments will be for a period of 6 months in the General Accident Service and may (at the applicants' request) include a period in the 32-Bedded Burns Unit.

Applications to Administrator.

BIRMINGHAM GROUP 9 HOSPITAL MANAGEMENT COMMITTEE. Whole-time JUNIOR HOSPITAL MEDICAL OFFICERS (2 posts). This Group of nearly 1400 Beds offers much scope for training in modern methods of mental deficiency treatment. Psychological investigation carried out in well-equipped clinical departments. Excellent opportunity for study of young children. Recognised for D.P.M. Married or single accommodation available.

Applications, with names and addresses of 2 referees, to Secretary, Coleshill Hall Hospital, Coleshill, Birmingham, as soon as possible.

BIRMINGHAM. MONYHULL HALL HOSPITAL. (1142 Beds.) BIRMINGHAM (MENTAL D) GROUP OF HOSPITALS. Whole-time SENIOR REGISTRAR in Psychiatry, with some duties at ancillary premises including residential special school for 350 children. Hospital recognised for D.P.M. Single accommodation available. Considerable experience specialty required. Successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the United Birmingham Hospitals in accordance with arrangements for the interchange of Registrars agreed between the 2 Boards.

Application forms from Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, to be returned before 13th December, 1954.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

1. South Warwickshire Hospital Group, 50, Hollywalk, Leamington Spa

Whole-time REGISTRAR in General Surgery. Duties mainly at Warwick Hospital (350 Beds). Experience general surgery desirable.

2. Stoke-on-Trent Hospital Management Committee, Princes-road, Hartshill, Stoke-on-Trent

Whole-time REGISTRAR in E.N.T. Surgery for North Staffordshire Royal Infirmary (475 Beds). Experience specialty essential. Resident or non-resident.

Application forms from Group Secretaries, to be returned before 13th December, 1954. Candidates may visit hospitals.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) RESIDENT HOUSE SURGEON (Surgical Department), vacant 21st January, 1955. Pre-registration post. Recognised for F.R.C.S. examination. This is a busy general hospital with a large Outpatient Department and the post offers excellent opportunities for general experience under Consultant Surgeons.

Applications, with names and addresses of referees, should be sent to the Hospital Secretary.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. ROYAL VICTORIA HOSPITAL, WESTBOURNE, HANTS. Applications are invited for the immediate appointment of HOUSE SURGEON for E.N.T. and ophthalmic duties. In addition to duties at the above Hospital, the successful candidate will be required to assist in the E.N.T. outpatient clinics at the Royal Victoria Hospital, Bournemouth, and Poole General Hospital, Poole. The appointment is recognised for the D.O. and D.L.O. Diplomas but not for pre-registration purposes.

Applications to the Deputy Hospital Secretary, Royal Victoria Hospital, Shelley-road, Bournemouth.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ANÆSTHETIST (Senior House Officer) required from 17th December. The post is recognised for the D.A. and F.F.A.R.C.S. and is tenable for 12 months. Experience with Thoracic Unit available.

Applications to the Deputy Hospital Secretary at the Hospital.

BOURNEMOUTH (near). CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HANTS. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE PHYSICIANS (Pre-registration Interns) required for general medicine. The posts become vacant on 18th and 24th January respectively. The Hospital comprises 61 acute medical beds, 188 chronic sick, 34 pædiatric and 6 chest diagnostic.

Applications, with copies of testimonials, to the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (289 Beds.) Applications invited for following posts :—

(*a*) HOUSE SURGEON for general surgical duties, recognised for F.R.C.S. Vacant late December.

(*b*) HOUSE SURGEON for general and other duties, vacant late December.

(*c*) HOUSE PHYSICIAN for general medical duties, vacant late November.

(*d*) HOUSE PHYSICIAN for pædiatric and general medical duties, vacant mid-December.

(*e*) HOUSE SURGEON for obstetric and gynæcological duties, vacant mid-December ; recognised for D.Obst.R.C.O.G.

All posts recognised for pre-registration.

Inquiries to Hospital Secretary.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL, Eastern-road. (300 Beds.)

2 HOUSE SURGEONS (1 including gynæcology). Recognised for pre-registration and F.R.C.S.

2 HOUSE PHYSICIANS. Recognised for pre-registration. Posts vacant mid-December.

Applications, stating age, qualifications and experience, and naming 2 referees, to the Administrative Officer.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) CASUALTY HOUSE SURGEON (1 of 3). Duties include work in Orthopædic and Traumatic Unit. Recognised for pre-registration and F.R.C.S. Vacant beginning of December.

Applications, stating usual particulars and naming 2 referees, to the Administrative Officer.

BRIGHTON. ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road. (130 Beds.) HOUSE SURGEON and HOUSE PHYSICIAN for 6 months from 6th January, 1955, and 28th December, 1954, respectively. Both posts offer wide experience in pædiatrics and are recognised for D.C.H. ; that of House Surgeon is open to pre-registration candidates.

Applications, stating age, nationality, qualifications and experience, together with copies of recent testimonials, to the Administrative Officer by 4th December, 1954.

BRIGHTON GENERAL HOSPITAL. Senior House OFFICER for General Surgical Unit (60 Beds), vacant December, 1954. Recognised for F.R.C.S. and offers considerable scope for operative surgery.

Applications, stating age, qualifications and experience, and naming 2 referees, to Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BRIGHTON GENERAL HOSPITAL. House Surgeon to the General Surgical Unit (60 Beds). Recognised for F.R.C.S. Post vacant 9th January, 1955. The post is recognised as a pre-registration appointment.

Applications, stating age, qualifications, experience, and naming 2 referees, to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BRADFORD. ST. LUKE'S HOSPITAL. Orthopædic HOUSE SURGEON/CASUALTY OFFICER required. Salary £425–£525 p.a., less £125 p.a. residential emoluments. Recognised pre-registration appointment.

Applications, stating age, nationality, qualifications and experience with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ROYAL EYE AND EAR HOSPITAL. HOUSE SURGEON (ophthalmology), vacant now. Recognised for D.O.M.S. and F.R.C.S. Salary according to Whitley Council (M.D.B.) rates.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD ROYAL INFIRMARY. Senior House SURGEON (general and urology), vacant 1st February, 1955. Recognised for F.R.C.S. Salary according to Whitley Council (M.D.B.) rates.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRADFORD CHILDREN'S HOSPITAL. Senior House OFFICER (Female), vacant 19th January, 1955. Recognised for D.C.H. Salary £745 p.a., less £150 p.a., residential emoluments.

Applications, stating age, nationality, qualifications and experience with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRISTOL. HAM GREEN HOSPITAL, Pill, near Bristol. Applications are invited for the post of SENIOR HOUSE OFFICER in the tuberculosis wards (188 Beds) of the above Hospital. The Hospital is fully equipped for the modern treatment of pulmonary tuberculosis, including regular major thoracic surgery. Good accommodation, male or female, is available. Salary at present £745 p.a., less £135 p.a. residential costs.

Apply Secretary, Ham Green Hospital, Pill, near Bristol.

BURTON-ON-TRENT GENERAL INFIRMARY. ResiDENT ANÆSTHETIST (Junior Hospital Medical Officer). Non-resident considered. Recognised for the F.F.A.R.C.S.

Applications to Group Secretary.

COLCHESTER. ESSEX COUNTY HOSPITAL. (188 Beds.) Applications are invited for the post of HOUSE OFFICER (surgical), first, second, third, or pre-registration post ; tenable for 6 months.

Applications, with copies of 3 testimonials, to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) House SURGEON (resident) for Fracture and Orthopædic Unit required immediately for 6 months in first instance. Post approved for pre-registration candidates.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, General Hospital, London-road, Croydon.

CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum Tenens ANÆSTHETIC REGISTRAR (resident), whole-time, for Group duties mainly at Mayday Hospital (618 Beds), commencing 27th December for approximately 3 months. Candidates must have experience in anæsthetics and possession of D.A. an advantage.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned immediately.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH, SUSSEX. MID-SUSSEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (obstetrics), vacant 11th January, 1955, tenable for 6 months. Post recognised for Pre-registration Service but not for M.R.C.O.G.

Applications, with details of age, experience, nationality, and naming 2 referees, to Group Secretary, at above address.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH, SUSSEX. MID-SUSSEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (medical), vacant 14th December, tenable for 6 months. Recognition for pre-registration purposes applied for.

Applications, with details of age, experience, nationality, and naming 2 referees, to Group Secretary at above address.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of MEDICAL REGISTRAR to the United Cardiff Hospitals.

Application forms can be obtained from the Secretary, United Cardiff Hospitals, Cardiff Royal Infirmary.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House OFFICER (E.N.T. Department) for 6 months from 25th January, 1955. Recognised Pre-registration Service (surgical).

Apply, stating age, nationality, qualifications, and experience with dates, and copies of 3 testimonials, to the Secretary by 11th December. Interviews 20th December.

CHELMSFORD HOSPITALS. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer) to large surgical units, for a period of 12 months.

Applications, stating age, sex, qualifications, and experience with recent testimonials, should be sent to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHESTERFIELD. WALTON SANATORIUM. (146 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time REGISTRAR (chest diseases) required. A 3 bed-roomed house is available to the successful candidate. All forms of major thoracic surgery for pulmonary tuberculosis are undertaken at this Hospital. Some clinic work would be undertaken under the supervision of the Consultant concerned. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 6th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) Required, CASUALTY OFFICER from 1st December (Senior House Officer) resident or non-resident. The appointment is mainly that of Outpatient Sorting Officer, and gives time and opportunity for reading for a higher qualification and is recognised by the Royal College of Surgeons for the F.R.C.S. Applications for a 6-months appointment would be considered. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to Physician-Superintendent as soon as possible.

CHICHESTER. ST. RICHARD'S HOSPITAL. (400 Beds.) Applications are invited for 2 HOUSE SURGEONS (pre-registration) for 6 months in the first instance. The Men or Women appointed to work primarily in the surgical wards —mainly general surgery and some orthopædic work. Hospital recognised for F.R.C.S. Post vacant 1st January, 1955.

Applications, stating age, qualifications and experience, together with names of 2 persons to whom reference may be made, should be sent to the Surgeon-Superintendent immediately.

DEVIZES, WILTSHIRE. ROUNDWAY HOSPITAL. (For Nervous and Mental Diseases—1447 Beds.) Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER for duty at the above Mental Hospital. All forms of modern treatment available, including Insulin Unit and outpatient clinics at 3 general hospitals. Salary, £775 p.a., rising by £50 to £1075 p.a. Accommodation for a single man for which £150 p.a. will be charged, or furnished house for a married man available at a rent of £3 per week plus rates.

Applications, giving names and addresses of 2 referees, to the Medical Superintendent as soon as possible.

DENBIGH. THE NORTH WALES HOSPITAL FOR NERVOUS AND MENTAL DISORDERS. JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER required. Residential accommodation at present available for single person only. The Hospital has modern treatment facilities, and together with its associated Adult and Child Guidance Clinics is recognised by the R.M.P.A. for the purpose of their D.P.M. examination.

Applications, with names of 2 referees, to the Medical Superintendent.

S. L. FROST, Secretary to the Management Committee.

DONCASTER HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (Senior House Officer) between Western Hospital, Doncaster, and Doncaster Royal Infirmary. Resident at Western Hospital.

Applications to the Secretary to the Committee at the Doncaster Royal Infirmary by 18th December, 1954.

DORCHESTER. DORSET COUNTY HOSPITAL. (113 Beds.) HOUSE PHYSICIAN required (Male or Female). Post tenable for 6 months and approved for Pre-registration Service. Vacant 1st January, 1955.

Applications, giving details of age, experience, qualifications, and nationality, together with copies of testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, immediately.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (395 Beds. Recognised for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (ophthalmology) required. Post becomes vacant 1st March. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 6th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House SURGEON (general surgery), pre-registration, vacant 1st January, 1955.

Apply, with details and copies of 2 recent testimonials, to Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House PHYSICIAN (pre-registration), vacant 1st January, 1955.

Apply, with details and copies of 2 recent testimonials, to Secretary.

DERBY. CITY HOSPITAL. House Physician (pre-registration) or SENIOR HOUSE OFFICER required latter half of December.

Apply, stating full details, together with copies of 2 recent testimonials, to the Medical Superintendent.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) HOUSE PHYSICIAN (pre-registration) or SENIOR HOUSE OFFICER, vacant January. Post recognised for D.C.H.

Apply, with 2 names for reference, to the Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) HOUSE SURGEON (pre-registration) or SENIOR HOUSE OFFICER, vacant January. Post recognised for D.C.H.

Apply, with 2 names for reference, to the Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

EPPING. ST. MARGARET'S HOSPITAL. (485 Beds.) Pre-registration HOUSE SURGEON (general and E.N.T. surgery).

Pre-registration HOUSE PHYSICIAN.

Both posts vacant 1st January, 1955. Busy general hospital with easy access to London.

Applications, with copy of testimonial from medical school, to reach the Group Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex, by 10th December, 1954.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE PHYSICIAN (first post—approved pre-registration). Required 12th January, 1955. General medical duties. 6 months appointment.

Applications, with the names and addresses of 2 referees, to the Secretary of the Management Committee.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT PÆDIATRIC HOUSE PHYSICIAN for above Hospital. Post vacant 13th January, 1955. 6 months appointment. Post recognised for pre-registration purposes and for D.C.H.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 11th December, 1954.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) 2 RESIDENT HOUSE PHYSICIANS for above Hospital. Posts vacant 21st and 31st January, 1955. 6 months appointments. Posts recognised for pre-registration purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 11th December, 1954.

EDGWARE GENERAL HOSPITAL. (715 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Part-time SENIOR REGISTRAR in Dermatology required for 2 half-day sessions per week at above Hospital. Hospital may be visited by direct appointment with Medical Director.

Application forms obtainable from, and returnable to, Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, Middlesex, by 11th December, 1954.

FARNBOROUGH HOSPITAL, Farnborough, Kent. (800 Beds.) HOUSE SURGEON required for 6 months from 27th December, 1954. Recognised for the F.R.C.S. Preference given to pre-registration candidates.

Apply, stating age, qualifications with dates, and experience, and naming 3 referees, to the Administrative Officer, by 3rd December, 1954.

GLASGOW, S.W.1. SOUTHERN GENERAL HOSPITAL. SENIOR HOUSE OFFICER in Psychiatry. Applicants must be qualified at least 2 years.

Apply immediately to Secretary, Board of Management for Glasgow South-Western Hospitals, 1301, Govan-road, Glasgow, S.W.1, naming 2 referees.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Pathology based at above Infirmary.

Write, giving 3 names for reference, not later than 4th December, 1954, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty on 15th December. The post is recognised as a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HITCHIN HOSPITALS, Hitchin, Hertfordshire. Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer), vacant 15th December, 1954. The post offers varied experience, and is recognised for the D.A. examination.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital, Hitchin, immediately.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN. The post, which will be vacant on 1st December, is for a period of 6 months, and counts towards the D.C.H. qualification. Salary according to national scale.

Applications, with testimonials, to be sent to the Hospital Secretary.

HALIFAX. ROYAL HALIFAX INFIRMARY. House SURGEON required. Post vacant January. Approved pre-registration appointment.

Applications to Group Secretary, Royal Halifax Infirmary.

HALIFAX GENERAL HOSPITAL. House Physician required for Paediatric Unit of 35 Beds. Approved pre-registration appointment and recognised for D.C.H. Post vacant January.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HASTINGS. ST. HELEN'S HOSPITAL. (497 Beds.) HOUSE PHYSICIAN (resident) required for paediatrics and general medicine. National scale of salary. Post vacant 21st December.

Apply to Hospital Administrator.

ILFORD, ESSEX. KING GEORGE HOSPITAL. Ilford AND BARKING GROUP HOSPITAL MANAGEMENT COMMITTEE. There will be vacancies for the following at the above Hospital.

HOUSE SURGEON—8th January, 1955.
HOUSE PHYSICIAN—8th January, 1955.
HOUSE SURGEON—24th January, 1955.
HOUSE SURGEON—5th February, 1955.

Post or pre-registration.

Applications, giving full particulars and accompanied by testimonials, to be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary.

King George Hospital, Ilford.

ILFORD. KING GEORGE HOSPITAL. There will be a vacancy for a CASUALTY OFFICER at the above Hospital on 12th December, 1954, at a salary of £745 p.a., less £145 p.a. emoluments. This post is recognised for the F.R.C.S.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the General Consulting Surgeon. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of SENIOR HOUSE SURGEON to the Fracture and Orthopædic Department, vacant on 1st January, 1955. The post is graded Senior House Officer and is recognised for the F.R.C.S. examinations. The Department has 2 Consultants, about 60 beds and a large outpatient attendance ; it offers wide experience.

Applications, stating age, nationality and experience, together with copies of recent testimonials, to Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER for general medicine.

Applications, stating age, nationality, qualifications with copies of up to 3 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 7th December, 1954.

ILKLEY. MIDDLETON HOSPITAL. (430 Beds.) Resident SENIOR HOUSE OFFICER (surgical) required for Major Thoracic Surgical Unit at the above Hospital.

Applications, stating age, nationality, qualifications and experience, to Hospital Secretary.

KIRKCALDY GENERAL HOSPITAL. (74 Beds. General surgical and orthopædic.) 2 HOUSE OFFICERS (resident) required as at 1st February, 1955, 1 for duty in Orthopædic Department. Both posts qualify for pre-registration. Salary in accordance with national scale.

Apply, with copies of 2 recent testimonials, to the Medical Superintendent, East Fife Hospitals Board of Management, 243a, High-street, Kirkcaldy.

LLANELLY HOSPITAL. Glantawe Hospital Manage-MENT COMMITTEE. Applications are invited from registered medical practitioners for the resident appointment of JUNIOR HOSPITAL MEDICAL OFFICER in the E.N.T. Department of the above Hospital. Salary £775–£50–£1075.

Applications, with full details of experience, qualifications and age, together with the names of 2 referees, should be sent to the Hospital Secretary, Llanelly Hospital, Llanelly, Carms.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. (164 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER for duty in the E.N.T., Ophthalmic and Gynæcological Departments.

Full particulars, stating age, qualifications and experience, should be addressed to the Hospital Secretary, Llanelly Hospital, Marble Hall-road, Llanelly.

LEEDS, 7. CHAPEL ALLERTON HOSPITAL. (347 Beds.) MEDICAL REGISTRAR required for whole-time duty. National Health Service terms and conditions of service.

Detailed applications (9 copies), giving nationality, date of birth, qualifications and experience, including present appointments and the names of 3 referees, should reach Ministry of Health, Hospital Management Branch, Norcross, Blackpool, Lancashire, by 18th December, 1954.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (orthopædics). The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodgings, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOIKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics

Duties in the Hull A, Hull B, and East Riding Groups. Recognised for the F.F.A.R.C.S. Duties may include thoracic anæsthesia (non-resident).

General Medicine

Duties at the Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions), and the Rheumatism Clinic, General Infirmary at Leeds (2 sessions). Resident at Royal Bath Hospital, Harrogate.

General Surgery

Otley General Hospital (50 surgical beds). Consultant staff mainly from Leeds Teaching Hospitals. Appointment includes 2 sessions clinical work at the General Infirmary at Leeds (resident).

Obstetrics and Gynæcology

Wakefield A and B Groups (with occasional duties in Pontefract and Goole Groups). Offers good experience but is not at present recognised by the R.C.O.G. for membership purposes. Aggregate of 120 obstetric and 50 gynæcological beds (non-resident).

Orthopædic Surgery

(*a*) Woodlands Orthopædic Hospital, Rawdon (100 Beds), and Orthopædic Outpatient Department, Bradford Royal Infirmary. Offers excellent training in all branches of accident and orthopædic surgery (may be non-resident).

(*b*) Hull A Group (50 orthopædic beds), Hull B Group and East Riding Group (50 orthopædic beds) (non-resident). Includes some duties in the Casualty Department at the Hull Royal Infirmary.

(*c*) Huddersfield Royal Infirmary and other hospitals in the Huddersfield Group (34 orthopædic beds) (non-resident).

(*d*) St. James's Hospital, Leeds (64 orthopædic beds), and the Public Dispensary, Leeds (non-resident).

Otolaryngology

Duties at York County and City Hospitals (30 E.N.T. beds) (resident or non-resident).

Psychiatry

(*a*) Oulton Hall Hospital, near Wakefield, and affiliated Mental Deficiency Colonies (aggregating 780 Beds) (non-resident).

(*b*) Meanwood Park (Mental Deficiency) Hospital, Leeds (700 Beds). (Resident—flat available. Suitable for married couple without children.)

Facilities for attendance at the Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 9th December, 1954.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of SENIOR REGISTRAR in Psychiatry for duties at the General Infirmary at Leeds as Trainee Specialist in Child Psychiatry and at the Westwood Hospital, Bradford, and other associated Mental Deficiency Colonies. The duties will be allocated up to 5 sessions at the University Department of Psychiatry at the General Infirmary at Leeds and the remainder of the time in mental deficiency clinical duties. Accommodation is available for a single person. Candidates must hold the D.P.M. or equivalent qualification.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 10th December, 1954.

LEEDS. UNITED LEEDS HOSPITALS. General Infirmary AT LEEDS. RESIDENT ORTHOPÆDIC OFFICER (Senior House Officer status) required. The post will be for an initial period of 6 months, renewable for a further 6 months thereafter.

Applications, stating age, qualifications and previous posts with dates, with the names of 3 referees, should reach the Secretary to the Board not later than 11th December, 1954.

LEEDS. UNITED LEEDS HOSPITALS. The General INFIRMARY AT LEEDS. REGISTRAR in Anæsthetics required for duties in the Teaching Hospital Group. Terms and conditions of service for hospital medical staff apply.

Applications, stating age, qualifications, experience, with 3 names for reference, should be forwarded to the Secretary to the Board not later than 4th December, 1954.

LENNOXTOWN, STIRLINGSHIRE. LENNOX CASTLE INSTITUTION FOR MENTAL DEFECTIVES. (1250 Beds extending to 1370 in January, 1955.) Applications are invited for the following appointments at the above institution.

JUNIOR HOSPITAL MEDICAL OFFICER. Salary in accordance with recognised scale and subject to National Health Service superannuation regulations. Experience in mental deficiency or in youth organisations an advantage. Under Consultant supervision.

CLINICAL PSYCHOLOGIST willing to assist in Group Therapy. Salary scale of £415–£35–£450–£50–£500 during probationary period and £575–£30–£815–£35–£850 after obtaining certificate of proficiency. Terms and conditions subject to Whitley Council regulations.

Applications, in duplicate, stating age, qualifications and experience, together with names and addresses of 3 referees, to the Secretary, Board of Management, Lennox Castle, 113, Douglas-street, Glasgow, C.2.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. ROYAL LIVERPOOL CHILDREN'S HOSPITAL. Applications are invited for a post of SENIOR CASUALTY OFFICER (Senior House Officer grade) for the period 1st January–31st December, 1955.

Apply as soon as possible on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for appointment as (i) SENIOR REGISTRAR in Otorhinolaryngology and (ii) REGISTRAR in Otorhinolaryngology with duties at the Liverpool Ear, Nose and Throat Infirmary for the period to 30th September, 1955. The successful applicants will be eligible for reappointment from 1st October, 1955, until completion of the normal period of training.

Apply by 9th December, 1954, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

MANCHESTER. THE NORTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Medical Staff. Applications are invited for the posts of House Officers as shown below. These posts are approved for Pre-registration Service.

Crumpsall Hospital, Manchester, 8 (1229 Beds)

5 HOUSE OFFICERS (medicine). Posts vacant : 3 1st February, 1955 ; 1 6th February, 1955 ; 1 20th February, 1955.

3 HOUSE OFFICERS (surgery) (including 1 surgery and orthopædics). Posts vacant : 2 1st February, 1955 ; 1 20th February, 1955.

1 HOUSE OFFICER (obstetrics). Post vacant 20th February 1955.

Ancoats Hospital, Manchester, 4 (152 Beds)

1 HOUSE OFFICER (medicine). Post vacant 1st February, 1955.

3 HOUSE OFFICERS (surgery and orthopædics). Posts vacant : 1 11th January, 1955 ; 1 15th January, 1955 ; 1 1st February, 1955.

1 HOUSE OFFICER (E.N.T. surgery). Post vacant 15th January, 1955.

Manchester Northern Hospital, Manchester, 8 (116 Beds)

1 HOUSE OFFICER (surgery). Post vacant 20th January, 1955.

1 HOUSE OFFICER (medicine and E.N.T.). Post vacant 4th March, 1955.

Manchester Victoria Memorial Jewish Hospital, Manchester, 8

1 HOUSE OFFICER (medicine). Post vacant 4th January, 1955.

1 HOUSE OFFICER (surgery). Post vacant 1st February, 1955.

The applicants should indicate the appointment required and should state age, nationality, present and previous appointment with dates, and include the names and addresses of 2 referees. Applications should be sent to the undersigned before 7th December, 1954. T. F. POTTS, Group Secretary.

Crumpsall Hospital, Manchester, 8.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited from registered medical practitioners (Male or Female), for 2 posts of HOUSE PHYSICIAN in the Neonatal Unit of Saint Mary's Hospitals (attached to the University Department of Child Health) for a period of 6 months, vacant 1st February and 1st March, 1955. Previous hospital experience essential and pædiatric experience desirable. Duties include the care of the newborn in the Maternity Department, the care of infants in the infants' ward and work in the clinics under the charge of the Department of Child Health. Salary in accordance with national scale.

Applications, stating qualifications and experience, together with the names of 3 referees, should be sent to the undersigned within 10 days of the appearance of this notice.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER to the Department of Hæmatology, to commence on 14th February, 1955. Whole-time, non-resident post. Appointment for 6 months, renewable for a second and possibly a third 6 months.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 11th December, 1954.

G. H. TAYLOR, Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in Anæsthetics with main duties at Park Hospital, Davyhulme. There is a non-tuberculous Thoracic Surgery Unit of 50 Beds at the Hospital. Appointment for 1 year in first instance, renewable. Post vacant 31st January, 1955.

Application forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER REGIONAL HOSPITAL BOARD. Birch HILL HOSPITAL. REGISTRAR in Obstetrics and Gynæcology. Post now vacant. Modern, busy unit. Recognised for D.Obst.R.C.O.G.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of SENIOR REGISTRAR in obstetrics and gynæcology to the North Manchester Group of hospitals, mainly at Crumpsall Hospital. Arrangements may later be made for the successful applicant to transfer to the United Manchester Hospitals (St. Mary's Hospitals) to continue training.

Forms of application, obtainable from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, should be returned by 13th December, 1954.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. Post vacant December, 1954. There are 55 E.N.T. beds and 6 specialist operating sessions each week. Valuable experience is available, and the post is recognised for the purpose of the F.R.C.S. and the D.L.O. Salary will be £745 a year, less £150 a year for residential emoluments.

Applications to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following pre-registration posts :—

(*a*) HOUSE SURGEON.
(*b*) HOUSE PHYSICIAN.

6-month appointments. Posts vacant January, 1955. Salary at the rate of £425, £475 to £525 according to experience. A deduction at the rate of £125 a year is made in respect of board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON. Post recognisable for the F.R.C.S. (Eng.). Salary £745 a year, with deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MERTHYR TYDFIL. ST. TYDFIL'S HOSPITAL. (395 Beds.) MERTHYR AND ABERDARE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (resident) in General Medicine ; excellent acute medical work. Applicants must have been registered not less than 1 year as a medical practitioner and previously have held house appointments. Salary £745 p.a., less emoluments. Ministry of Health terms/conditions of service. Appointment for 1 year in first instance.

Applications, with copies of 2 recent testimonials, to the Group Secretary, Merthyr and Aberdare Hospital Management Committee, St. Tydfil's Hospital, Merthyr Tydfil.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited from general practitioners for post of Honorary CLINICAL ASSISTANT in General Medicine for 1 year from 1st January. 1 session per week on a Friday morning.

Applications, stating age, qualifications with dates and nationality, with copies of recent testimonials or names of 2 referées, to Hospital Secretary.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

SENIOR SURGICAL REGISTRAR (resident in Hospital or within 5 miles), King George Hospital, Ilford, Essex. Transitional appointment open to candidates who have, since November, 1950, completed or substantially completed training as Senior Registrars. Tenure restricted under present rules to 31st December, 1955.

Applications in triplicate, with 3 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 11th December, 1954.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

SURGICAL REGISTRAR (resident in hospital or within 5 miles), King George Hospital, Ilford, Essex. Duties include some orthopædic surgery.

REGISTRAR in Mental Deficiency (resident or non-resident. House available if required), Royal Eastern Counties Hospital, Colchester, Essex. Recognised for D.P.M.

Appointments subject to review after 1 year.

Applications in triplicate, with 3 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 11th December, 1954.

NOTTINGHAM GENERAL HOSPITAL. Resident HOUSE PHYSICIAN required, Male or Female (open to pre-registration candidates), at the above Hospital, duties to commence about 11th December next. Salary and conditions of service in accordance with published regulations. The appointment is for a term of 6 months.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR ORTHOPÆDIC AND FRACTURE HOUSE OFFICER (locum tenens considered). The post offers exceptional experience in traumatic surgery. Duties to commence about 9th December, 1954. Salary and conditions of service in accordance with Ministry regulations. If resident £150 deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners (Male or Female—locum tenens considered) for the post of RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER. Duties to commence about 23rd December, 1954. Terms and conditions of service in accordance with published regulations of the Ministry of Health. £150 deducted for residential emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident House PHYSICIANS required (Male or Female) (open to pre-registration candidates) at the above Hospital ; duties to commence about 24th December next. Salary and conditions of service in accordance with published regulations. The appointments are for a term of 6 months.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

H. M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident House SURGEON (pre-registration first or second post) required for 20th December, for 6 months. Recognised for F.R.C.S.

Applications, stating age, qualifications and experience, to be sent to H. M. STANLEY, Group Secretary.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) OBSTETRIC HOUSE OFFICER (recognised for pre-registration purposes). Applications are invited for the above post which will be graded Senior House Officer or House Officer in accordance with experience. *Recognised for M.R.C.O.G.* Post vacant on 5th January, 1955 (possibly 2 weeks earlier).

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, SENIOR HOUSE OFFICER and HOUSE SURGEON for the above Hospital. Duties to commence immediately. Salaries and conditions of service in accordance with Ministry regulations.

Applications, stating age, qualifications and experience, together with testimonials, to be sent as soon as possible to—
HENRY M. STANLEY, Group Secretary.
General Hospital, Nottingham.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Tees-side Hospital Management Committee, Surgical Clinic No. 2 (Main hospitals—North Ormesby, 188 Beds; Hemlington, 200 Beds)

SURGICAL REGISTRAR (whole-time), resident, or non-resident to reside in Middlesbrough. Single accommodation available. Appointment for 1 year in the first instance and may be renewed for a further period. Post recognised for F.R.C.S.

South Shields District Hospital Management Committee

REGISTRAR OBSTETRICIAN AND GYNÆCOLOGIST (whole-time) at South Shields Maternity Hospital (36 Beds). Appointment, tenable from 1st March, 1955, is for 1 year in the first instance and may be renewed for a further period. Hospital recognised by Royal College for obstetrics. Separate house, close to the Hospital, is available.

South West Durham Hospital Management Committee

REGISTRAR ORTHOPÆDIC SURGEON (whole-time) required at the General Hospital, Bishop Auckland (300 Beds). Appointment for 1 year in the first instance and may be renewed for a further period. Married or single accommodation available. There is a 51-Bed Orthopædic Unit at the Hospital.

Tees-side Hospital Management Committee

REGISTRAR PATHOLOGISTS (2), whole-time, required for Area Group Laboratory. Appointments offer unique opportunity to obtain training in all branches of clinical pathology. Appointments for 1 year in the first instance and may be renewed for a further period.

Newcastle Tuberculosis Administrative Area

REGISTRAR CHEST PHYSICIAN (whole-time) required for the above Area, which includes the Northern Counties Chest Hospital and an allocation of approximately 60 Beds at the Newcastle General Hospital (860 Beds). Accommodation may be available. The appointment will be for 1 year in the first instance and may be renewed for a further period.

Regional Thoracic Service

REGISTRAR THORACIC SURGEON (whole-time), resident, for duties at Regional Centre (160 Beds) at Shotley Bridge General Hospital, where the work is almost entirely non-tuberculous (cardiovascular, œsophageal and pulmonary) and at associated sanatoria. The appointment is intended for a trainee in thoracic surgery. Applicants should have completed training in general surgery. A higher qualification is necessary and some experience in chest surgery will be an advantage. Appointment for 1 year in the first instance and may be renewed for a further period.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE HOSPITAL FOR SICK CHILDREN. (92 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the posts of 2 RESIDENT HOUSE OFFICERS vacant on 7th January, 1955 (pre-registration). These posts are recognised for D.C.H.

Applications should be addressed to Secretary, Hospital for Sick Children, Great North-road, Newcastle, 2.

NEWCASTLE GENERAL HOSPITAL. (847 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF NEUROLOGICAL SURGERY. SENIOR HOUSE OFFICER (resident or non-resident). The post affords excellent experience in neurology and would be of value to candidates preparing for a higher qualification. No surgical work is involved, the duties being purely medical and no previous neurosurgical experience is required. The appointment is tenable for 12 months in the first instance.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials.

NEWCASTLE GENERAL HOSPITAL. (847 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY.

OBSTETRICAL HOUSE SURGEON (70 Beds).

GYNÆCOLOGICAL HOUSE SURGEON (30 Beds).

Consideration may be given to the possibility of alternating these posts, which are resident, and vacant 7th January, 1955. The posts are recognised for the purpose of Pre-registration Service and preference will be given to provisionally registered persons who have carried out their first house appointment. The department is recognised for the Diploma of M.R.C.O.G., and D.Obst.R.C.O.G., and undertakes the training of Medical Students in the University of Durham.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 13th December, 1954.

NEWCASTLE GENERAL HOSPITAL. (847 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. The following posts become vacant on 7th January, 1955. Undergraduate teaching is conducted in most departments of the Hospital.

HOUSE PHYSICIANS (4) General Medical Wards (2 of these posts rotate with the House Physician post in the Cardio-vascular Department).

HOUSE PHYSICIAN (1) Cardiovascular Department (this post rotates with 2 House Physician posts in general medicine).

HOUSE PHYSICIANS (2) Children's Unit. This department is actively associated with the Department of Child Health of Durham University, and the post offers good opportunities for gaining experience in paediatrics.

HOUSE PHYSICIAN (1) Geriatric Unit.

HOUSE SURGEONS (2) General Surgery (recognised for F.R.C.S. Diploma).

HOUSE SURGEON (1) Casualty Department (recognised for F.R.C.S. Diploma).

The above posts (except 1 House Physician—Children's Unit) are recognised for the purpose of Pre-registration Service and applications will be accepted from those on the point of taking their qualifying examinations.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials, by 13th December, 1954.

NEWMARKET GENERAL HOSPITAL, Newmarket. Applications are invited for the post of HOUSE SURGEON, vacant 23rd January, 1955. Duties include surgical house charge of general surgical, E.N.T. and eye cases. The post is resident, available for 6 months, and is recognised for pre-registration.

Applications, with copies of 3 recent testimonials, should be addressed to the Physician-Superintendent.

NEWMARKET GENERAL HOSPITAL, Newmarket. Applications are invited for the post of HOUSE PHYSICIAN, vacant 9th January, 1955. Duties include house charge of general medical and pulmonary tuberculosis beds. The post is recognised for pre-registration, is resident, and tenable for 6 months. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to Physician-Superintendent.

NEWMARKET GENERAL HOSPITAL, Newmarket. SENIOR HOUSE OFFICER (resident) for care of general surgery and orthopædic patients required. Post now vacant. Salary £745 p.a.

Applications, with full particulars of qualifications, experience, and copies of 2 recent testimonials, to the Physician-Superintendent.

ORPINGTON HOSPITAL, Orpington, Kent. Resident SENIOR HOUSE PHYSICIAN required in January, 1955, for 60-Bedded Tuberculosis Unit (30 male and 30 female). Affords good clinical experience in diagnosis and treatment of acute and chronic pulmonary tuberculosis. Offers excellent opportunity for higher qualification study, with access to clinical material in hospital's general medical and surgical wards. Ex-patient Medical Officer favourably considered.

Apply Physician-Superintendent.

OXFORD. WINGFIELD-MORRIS ORTHOPÆDIC HOSPITAL. Applications are invited from suitably qualified persons for 2 SENIOR HOUSE OFFICER grade appointments. 1 will become vacant at the end of December, 1954; the other at the end of January, 1955.

Applications, with names of referees, to be submitted to the Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of GYNÆCOLOGICAL HOUSE SURGEON for duties at Queen Alexandra Hospital, Portsmouth (50 gynæcological beds), vacant 1st January, 1955. Post recognised for M.R.C.O.G. Not a pre-registration post. At the end of 6 months successful candidate would be offered post at St. Mary's Hospital, Portsmouth (50 obstetric; 40 gynæcological beds) which is recognised for M.R.C.O.G. and D.Obst.R.C.O.G.

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

35, Grove-road South, Southsea.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. HOUSE OFFICER in Obstetrics, at the Alexandra Maternity Home, Devonport, vacant November, 1954.

Applications, stating age, nationality, qualifications, and experience, with names of 3 referees, to be sent to—
ARTHUR R. CASH, Group Secretary, Plymouth.
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. PÆDIATRIC HOUSE PHYSICIAN (pre-registration post), vacant 1st January, 1955. Recognised for the D.C.H.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to—
ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER to work in the Chest Unit (72 Beds) at the General Hospital, Rochford, and at the Lancaster House Chest Clinic, Southend-on-Sea, to commence duty early January. Good experience in general medicine essential, and previous experience in tuberculosis and diseases of the chest desirable. Salary £745 p.a.

Applications, stating age, &c., to be sent to the undersigned by 10th December, 1954. J. C. FIELD, Secretary.

PAISLEY AND DISTRICT HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the following appointments :—

Royal Alexandra Infirmary, Paisley
HOUSE PHYSICIANS.
HOUSE SURGEONS.
JUNIOR HOSPITAL MEDICAL OFFICER (orthopædics).

Paisley I.D. Hospital
HOUSE PHYSICIAN.
JUNIOR HOSPITAL MEDICAL OFFICER.

Maternity Unit (Barshaw and Thornhill Maternity Hospitals)
2 HOUSE OFFICERS.

The posts become vacant on 1st February, 1955.

Applications should be addressed to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT ASSISTANT PATHOLOGIST, vacant immediately. The appointment is for 6 months, and previous experience in pathology is not essential. Salary £525 p.a., less £125 for board-residence.

Write, stating age, qualifications and dates, nationality and present post, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of SENIOR RESIDENT ANÆSTHETIST, vacant 1st January, 1955, for a period of 1 year. Post recognised for F.F.A.R.C.S. Salary £745 p.a., less £125 board-residence.

Write, stating age, qualifications with dates, nationality and present post, with copy of 1 recent testimonial, to the Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered and provisionally registered medical practitioners (Male or Female) for the post of RESIDENT JUNIOR HOUSE SURGEON (general surgery), vacant 21st February, 1955, for a period of 6 months. Salary £425–£525, according to experience, less £125 board-residence.

Write, stating age, qualifications with dates, nationality, present post, with copy of 1 recent testimonial, to Secretary.

READING AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (Area Accident and Orthopædic Department), vacant mid-December. Duties, including casualty work, at Battle Hospital, Reading (343 Beds). Person appointed will work with Registrar and House Officers.

Apply, stating age, nationality, present post, qualifications with dates, together with names of 2 referees, to Group Secretary, 3, Craven-road, Reading.

RENFREWSHIRE MENTAL HOSPITALS BOARD OF MANAGEMENT. RICCARTSBAR HOSPITAL, PAISLEY. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital, which is recognised for training for the London University, London Conjoint, and R.M.P.A. Diplomas in Psychological Medicine. The Hospital, of approximately 350 Beds, uses all modern treatments, and has associated Adult and Child Guidance Clinics. The successful candidate will be given every facility to attend special courses of instruction and clinics. Salary and conditions of service in accordance with National Health Service regulations.

Applications, in writing, with the names of 2 referees, should be sent to the Physician-Superintendent within 14 days of this date.

RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required from 1st February, 1955, at each of the following hospitals. Pre-registration if suitable candidate available.

Caerphilly (6 miles from Cardiff), 144 Beds for general surgery, orthopædics, E.N.T., ophthalmology and gynæcology; 26 Beds for general medicine. Busy outpatients, radiology and Pathology Departments.

Tredegar (20 miles from Newport, Mon. and 24 from Teaching Hospital at Cardiff; 6 miles from the Vale of Usk). Surgical Unit of 50 Beds with also 6 orthopædic beds under daily supervision of Consultant Surgeons and visiting supervision of Orthopædic Surgeon. Busy Outpatient Casualty and Radiology Departments. Married quarters available.

Salary £425–£525 according to experience, less appropriate deduction for married quarters (if required).

Apply, with full particulars, to Group Secretary, Hospital Management Committee, St. Martin's-road, Caerphilly, by 1st January.

ROCHDALE. BIRCH HILL HOSPITAL. Rochdale and DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN, post vacant January at above Hospital. Pre-registration candidates eligible.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE PHYSICIAN (Male) required from 6th January, 1955. (Post not approved for pre-registration purposes.)

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as early as possible.

RYDE, I.W. ROYAL I.W. COUNTY HOSPITAL. (116 Beds.) RESIDENT HOUSE SURGEON (pre-registration post and recognised for F.R.C.S.), vacant late January.

Applications, with names of 2 referees, to Hospital Secretary not later than 13th December.

RYDE, I.W. ROYAL I.W. COUNTY HOSPITAL. (116 Beds.) RESIDENT HOUSE PHYSICIAN (pre-registration post), vacant early January.

Applications, with names of 2 referees, to Hospital Secretary not later than 13th December.

SOUTHEND GENERAL HOSPITAL. Applications are invited from registered or provisionally registered practitioners for the following posts :—

RESIDENT GENERAL HOUSE PHYSICIAN. Post vacant 30th December, 1954.
RESIDENT GENERAL HOUSE PHYSICIAN. Post vacant 23rd January, 1955.
RESIDENT HOUSE SURGEON. Post vacant 1st January, 1955.
RESIDENT HOUSE SURGEON. Post vacant 20th January, 1955.

Salaries according to previous appointments held, less the prescribed charge for residential emoluments.

Applications, stating the appointment applied for, age, qualifications and previous experience, with copies of recent testimonials (1 testimonial sufficient from applicants for first appointment), to reach the undersigned by 1st December, 1954. J. C. FIELD, Secretary.

SOUTHPORT GENERAL INFIRMARY. (195 Beds. Recognised for F.R.C.S. and pre-registration.)
HOUSE SURGEON (general surgery and gynæcology).
HOUSE SURGEON (general surgery and ophthalmology).

Posts are resident and become vacant December, 1954, and late January, 1955, respectively.

Apply to— T. CROOK, Group Secretary,
Southport and District Hospital Management Committee.
Promenade Hospital, Southport.

SOUTHAMPTON CHEST HOSPITAL. (261 Beds.) SENIOR HOUSE OFFICER required mid-December, to be responsible for Infectious Diseases Unit (56 Beds). The duties are such as to suit a candidate reading for higher examinations. The unit is sited at a Hospital possessing up-to-date Tuberculosis and Thoracic Surgical Units, whilst the Southampton Group of hospitals as a whole affords excellent opportunities for study and experience in all branches of medicine.

Applications, together with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON EYE HOSPITAL. (32 Beds. Recognised for the D.O.M.S.). RESIDENT SENIOR HOUSE OFFICER required immediately. Salary £745 p.a.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICERS (2) required mid-January. Total establishment of 3. Posts tenable for 6 months.

Applications, with copies of testimonials, should be submitted immediately to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (471 Beds.) RESIDENT HOUSE PHYSICIAN required immediately. Post tenable for 6 months. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (471 Beds— 80 Surgical.) 2 HOUSE SURGEONS required beginning and middle of January, 1955. Posts tenable for 6 months. Both recognised for F.R.C.S. and Pre-registration Service.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEON required mid-December. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton, as soon as possible.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment at the Brighton and Lewes Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 11th December, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Pædiatrics to fill a vacancy in the approved hospital establishment at the Brighton and Lewes Group of hospitals. A higher qualification or special diploma would be an advantage. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 11th December, 1954.

STOCKPORT INFIRMARY, Stockport. (163 Beds.) Applications are invited for the post of HOUSE OFFICER or SENIOR HOUSE OFFICER (medicine).

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire, immediately.

SALFORD ROYAL HOSPITAL. Salford Hospital Management Committee. Applications invited for appointment of SENIOR HOUSE OFFICER (Orthopædic and Casualty Departments), resident. Post vacant mid-January. Recognised for F.R.C.S., gives opportunity for experience in emergency surgery. Salary subject to deduction of £140 p.a. for board and lodging.

Applications, with copies of 3 testimonials, to the Secretary, Salford Royal Hospital.

SALISBURY GENERAL HOSPITAL. Children's Department. SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of PÆDIATRIC HOUSE OFFICER to the above Department, situated at Odstock Hospital and containing 55 medical and surgical beds. The post is recognised for D.C.H. and becomes vacant mid-January, 1955.

Applications, stating age, nationality, qualifications, previous posts held, with relevant testimonials, should be submitted to Group Secretary, Odstock Hospital, Salisbury.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Dermatology in the Royal Infirmary of Edinburgh. The post is superannuable and is subject to the terms and conditions of the National Health Service.

Applications, giving particulars of age, qualifications, and previous experience, together with the names of 3 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, Scotland, 11, Drumsheugh-gardens, Edinburgh, 3, by 18th December, 1954.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Anæsthetics based at the Western Infirmary, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 14th December, 1954.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR HOUSE OFFICER in Pædiatrics at Stobhill Hospital, Glasgow. The appointment will be for 1 year in the first instance.

Applications, stating age, qualifications, experience, and present appointment, and naming 3 referees, to be lodged with the Secretary, Board of Management for Glasgow Northern Hospitals, 13, Woodside-place, Glasgow, C.3, not later than *30th November, 1954.*

SCUNTHORPE, LINCOLNSHIRE. WAR MEMORIAL HOSPITAL. (267 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. *Vacancy for HOUSE SURGEON 4th January* (pre-registration or Senior House Officer).

Applications, naming 2 referees, to Group Secretary.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. Applications invited for the resident post of SENIOR HOUSE OFFICER in Clinical Pathology at the above Hospital. Post vacant now. Pathological experience not essential, but candidates must have previous clinical experience. The successful candidate will be responsible for emergency pathological and blood-transfusion duties at the Hospital, and will work in turn in the different branches of clinical pathology *in the laboratories of the United Sheffield Hospitals.*

Applications, stating age, qualifications, and experience, with the names of 3 referees, should be sent immediately to the Superintendent, Royal Hospital, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) at the Children's Hospital. Post vacant *14th January, 1955. The post is suitable* for persons training for pædiatrics or contemplating a career in pathology. The holder is expected to attend clinical rounds and meetings and to assist in the investigation of clinical problems.

Applications, stating age, qualifications, and experience, together with the names of 2 referees (or enclosing copy testimonials) should be sent not later than 10th December, 1954, to the Superintendent, The Children's Hospital, Western Bank, Sheffield, 10.

SHEFFIELD. LODGE MOOR HOSPITAL. (496 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (infectious diseases) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 6th December, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR ORTHOPÆDIC REGISTRAR (transitional appointment) required up to 31st December, 1955, at the Doncaster Royal Infirmary. Applications invited from Senior Orthopædic Registrars in their fourth or subsequent years and from those who held such posts for 3 years or more but vacated them after 1st January, 1951.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, to arrive not later than 13th December, 1954.

TORQUAY. TORBAY HOSPITAL. (166 general beds.) RESIDENT HOUSE OFFICER (surgical), Male or Female, required for 3rd December, 1954. Post recognised for F.R.C.S. and pre-registration purposes. There is a complement of 5 Resident House Officers.

Applications, stating qualifications, nationality, and age, with copy testimonials (quoting reference F.955/46) to the Group Secretary, Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, S. Devon.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE PHYSICIAN required for post vacant 7th January. Preference given to persons seeking pre-registration House Officer post.

Applications, stating age, experience and qualifications with dates, together with copies of 2 testimonials, to Hospital Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. Applications invited for post of HOUSE PHYSICIAN to the Special Unit for Research in Juvenile Rheumatism, vacant 14th January. Post offers scope for those interested in research, pædiatrics, rheumatology or cardiology.

Applications, stating age, qualifications and experience with dates, together with copies of 2 testimonials, to Hospital Secretary.

TAPLOW, near MAIDENHEAD. CANADIAN RED CROSS MEMORIAL HOSPITAL. REGISTRAR required to the Special Unit for Research in Juvenile Rheumatism at the above Hospital. Post offers scope for those interested in research, pædiatrics, rheumatology, or cardiology. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 12th December.

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL, Rickmansworth-road, WATFORD, HERTS. (198 Beds.) Applications are invited from registered medical practitioners for the pre-registration post of HOUSE SURGEON, vacant the end of November. Salary according to the National Health Service scale.

Applications, together with copies of 2 recent testimonials, to—
CYRIL HOPKINSON, Administrator.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited from persons experienced in anæsthetics for the post of RESIDENT ANÆSTHETIST (Male or Female) graded as Senior House Officer. The Hospital is recognised for the D.A. examination. Salary is £745 p.a., less a deduction of £130 p.a. for residential emoluments.

Applications, stating qualifications and experience should be sent to— H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. *Applications are invited* from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the Warrington Infirmary. The Infirmary is recognised for the *D.A. examination. Scale of salary £745 p.a., less £130 p.a. for* residential emoluments.

Applications to—
H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARWICK GENERAL HOSPITAL. (350 Beds.) House *SURGEON and HOUSE PHYSICIAN required, possibility of* accommodation being available. Pre-registration or registered candidates may apply. Vacant end of January, 1955. Good experience in both specialties available.

Applications, with 2 testimonials, to *Medical Superintendent.*

WARWICK (near). CENTRAL MENTAL HOSPITAL. SENIOR HOUSE OFFICER required in this Mental Hospital of *1400 Beds with Neurosis Unit, 4 adult and 2 child psychiatry* clinics recognised for the D.P.M. Departments of Electro-encephalography, Occupational Therapy, Psychology and social work. A modern house is available.

Applications, together with the *names* and addresses of 3 referees, to the Medical Superintendent.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. *HOUSE SURGEON (pre-registration post),* vacant 14th December, 1954.

Applications to Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan-lane, Wigan.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON in General Surgery required, Male or Female, for post vacant 7th January. Recognised for F.R.C.S. Preference given to persons seeking pre-registration House Officer post.

Applications, stating age, qualifications with dates and nationality, with copies of recent testimonials, to Hospital Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Applications invited from general practitioners for posts of Honorary CLINICAL ASSISTANTS (3 posts—1 session per week, on Tuesdays, Wednesdays, and Thursdays) in General Medicine, which become vacant 1st January. Applicants required to be members of a Medical Protection Society.

Applications, stating age, qualifications with dates and nationality, with copies of recent testimonials or names of 2 referees, to Hospital Secretary.

WORCESTER (near). POWICK HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). The post offers experience in all branches of psychiatry, including all forms of modern treatment and outpatient clinics. The Hospital has a high admission-rate, is recognised for the D.P.M., and has associated Child Guidance Clinics and a Mental Deficiency Institute similarly recognised. Arrangements are made for Medical Officers to attend at the Birmingham Medical School for instruction in neurology.

Applications, with full details, and the names of 2 referees, to be forwarded to the Medical Superintendent.

WORCESTER ROYAL INFIRMARY. Applications invited for the post of SENIOR HOUSE OFFICER (resident) in Medicine which will be vacant mid-January. The post is of 1 years duration and is the senior of the resident medical posts.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary.

WORCESTER ROYAL INFIRMARY. Applications invited for the post of HOUSE PHYSICIAN (paediatrics).

Applications, with testimonials, to the Secretary.

WORCESTER ROYAL INFIRMARY. Applications invited for posts of HOUSE SURGEONS (pre-registration or otherwise) vacant January.

Applications, with testimonials, to the Secretary.

WORCESTER ROYAL INFIRMARY. Applications invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer status) vacant beginning January and tenable for 1 year. The post is recognised for the Diploma in Anæsthetics and the holder may expect to gain a great deal of experience with emergency work.

Applications, with copies of 3 testimonials, to be sent to the Secretary.

WICKFORD (near), ESSEX. RUNWELL HOSPITAL. (1032 Beds.) Locum Tenens for SENIOR REGISTRAR in Psychiatry (Male or Female) from 6th December for about 2 months. Duties in 1 of the Consultants' Divisions and to assist in outpatient work. Salary £24 a week; residential charge £180 a year.

Applications, with references, to Secretary.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (An Associated Hospital of the University of Birmingham Medical School)
HOUSE OFFICER (casualty), vacant now.

Wolverhampton and Midland Counties Eye Infirmary (Recognised for F.R.C.S. and D.O. examinations)
HOUSE OFFICER, vacant now.

New Cross Hospital, Wolverhampton (45 obstetric beds)
SENIOR HOUSE OFFICER (obstetric). Appointment recognised for D.Obst.R.C.O.G. Vacant 13th January.

Applications, with copies of 3 recent testimonials, to be sent to Group Secretary, The Royal Hospital, Wolverhampton.

WORTHING HOSPITAL, Lyndhurst-road, Worthing. (221 Beds—General.) WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. The vacancy for HOUSE PHYSICIAN will occur in January, 1955.

Applications from either registered medical practitioners, or pre-registration candidates, stating age, qualifications, experience, nationality and enclosing copies of 2 recent testimonials, to be forwarded to the Hospital Secretary as soon as possible.

A. V. Oakton, Group Secretary.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, Yorks *(229 Beds)*
ASSISTANT PATHOLOGIST (Senior House Officer) required in Area Laboratory, with attendance Branch Laboratory at Driffield. Offers experience all branches pathology.

Northfield Sanatorium, Driffield, Yorks *(78 Beds)*
SENIOR HOUSE PHYSICIAN, vacant now. Offers experience all branches tuberculosis within Group, including surgery, M.M.R., and clinics. Time for study. Ex-patients welcome.

Salary £745.

Detailed applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DUBLIN. ST. VINCENT'S HOSPITAL. Vacancy for Whole-time ASSISTANT PATHOLOGIST. Remuneration £1100. Leave to hold an extern teaching post.

Applicants should state age, qualifications, experience, and enclose copies of testimonials, not later than 14th December, 1954, to the Hon. Secretary, Medical Board, from whom further particulars may be obtained.

CHANNEL ISLANDS, JERSEY. GENERAL HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER at the above Hospital. Previous experience is essential. The Hospital has 200 Beds and is recognised as a training hospital for the F.R.C.S. The post is vacant now. The appointment is for 6 months in the first instance, but is renewable for a further 6 months. Salary £850 p.a., less £125 for residential emoluments.

Applications, to be submitted not later than 4th December, 1954, to the President, Public Health Committee, General Hospital, Jersey, C.I.

IBADAN, NIGERIA. UNIVERSITY COLLEGE HOSPITAL. The Board of Management invites applications for the appointment of SENIOR REGISTRAR in the Department of Surgery. Candidates must be registered medical practitioners and must hold higher qualifications in surgery, with experience of traumatic surgery. Contracts will be for 1 tour of 12–18 months, renewable by mutual agreement. There is a possibility of a University appointment within the next two years for which a Senior Registrar would be eligible to apply. Salary within the scale of £1308 p.a., rising by annual increments of £48 to £1452 p.a., plus expatriation pay where applicable of £300 p.a. Gratuity at the rate of £37 10s. for each completed period of 3 months service is payable on satisfactory completion of contract. Liberal leave, with free first-class passages for Officer and his wife, will be granted on full pay, on completion of each tour of duty. Part-furnished, modern bungalows or flats are provided at low rental. Outfit allowance of £60 is payable on first appointment. Officers are eligible for children's allowances. The officer appointed would be required to assume duty in March, 1955.

General: The University College, Ibadan, is in special relationship with the University of London. The Board of Management is responsible for 2 local Hospitals (350 Beds) pending completion in 1956 of the new Teaching Hospital (500 Beds) under construction.

Applications should be submitted not later than 22nd December, 1954, on the appropriate form, which can be obtained, with further particulars, on receipt of addressed foolscap envelope, from the Secretary, Teaching Hospitals Association, 61, Lambeth Palace-road, London, S.E.1.

BRITISH COLUMBIA. HOLLYWOOD SANITARIUM, NEW WESTMINSTER, B.C. Excellent facilities for young PSYCHIATRIST in a 70-bed, active private psychiatric hospital in British Columbia, dealing with a wide variety of acute psychiatric disorders. Research encouraged. Salary according to qualifications and experience.

All applications will be acknowledged and treated as confidential. Please state qualifications, experience, including present appointments, age, nationality, and names of 3 referees. Application, with a recent photograph, to A. J. Warren, M.D., D.P.M., Medical Superintendent, Hollywood Sanitarium, 515–5th Avenue, New Westminster, British Columbia, on or before 1st January, 1955.

BALTIMORE, MARYLAND, U.S.A. FRANKLIN SQUARE HOSPITAL. ROTATING INTERNSHIPS available. Fully approved, Council on Medical Education, American Medical Association.

Applications to Franklin Square Hospital, Baltimore 23, Md. U.S.A.

NEW YORK. ALBANY HOSPITAL, Albany, New York, U.S.A. PSYCHIATRY RESIDENCIES available in 700-Bed, university-teaching, general hospital, with 60-Bed acute treatment Psychiatric Unit fully approved for 3 years training. Experience includes dynamically-oriented psychotherapy with children and adults, shock therapies and neurologic training. Salary range $1620–$4000 annually plus laundry, uniforms and room.

Address inquiries to Medical Director.

NEW YORK. ALBANY HOSPITAL, Albany, New York, U.S.A. NEUROLOGY RESIDENCIES available in 700-Bed, university-teaching, general hospital. Salary range $1620–$2220 annually, plus laundry, uniforms and room.

Address inquiries to Medical Director.

NEW YORK. ALBANY HOSPITAL, Albany, New York, U.S.A. INTERNSHIPS and RESIDENCIES available in 700-Bed general, private Albany Hospital, directly connected with Albany Medical College. Approved for all major specialties. Participating in exchange-visitor programme. Salary range $1320–$2220 annually in addition to laundry, uniforms and room. All appointments begin 1st July, 1955.

For further information apply to Medical Director.

Public Appointments

ROYAL ARMY MEDICAL CORPS. *For new conditions* and terms of service see page 37.

BUCKS COUNTY COUNCIL. Applications are invited for the post of ASSISTANT COUNTY MEDICAL OFFICER from registered medical practitioners with special experience in mental deficiency work among adults and children. Salary within the scale £950–£1300 p.a. according to qualifications and experience, plus £100 p.a. for additional responsibility, with travelling and subsistence allowances on the Council's scale. The appointment is superannuable. The duties will be mainly those of an Assistant Medical Officer, including examinations and inspections in connection with the School Health Service and attendance at Child Welfare Centres, but the person appointed will also be required to assist the Departmental Medical Officer in the administration of the Council's scheme for the care of mental defectives.

Further particulars and forms of application may be obtained from the County Medical Officer, County Offices, Aylesbury, to whom applications must be delivered by 4th December, 1954. Guy R. Crouch, Clerk of the Bucks County Council.

County Hall, Aylesbury, 10th November, 1954.

DURHAM. COUNTY COUNCIL OF DURHAM. EDUCATION DEPARTMENT. The County Education Committee invite applications from registered medical practitioners (Men and Women) for appointment as SCHOOL MEDICAL OFFICERS (2 vacancies) to act under the direction of the Deputy Principal School Medical Officer. Applicants must have had at least 3 years experience in the practice of their profession and the possession of a Diploma in Public Health is desirable. Commencing salary is £950 p.a., rising by annual increments of £50 to a maximum of £1300 p.a. The successful candidates will be required to pass a medical examination and to contribute in accordance with the provisions of the appropriate superannuation act.

For conditions of appointment, and form of application, which must be returned not later than 6th December, 1954, apply, enclosing stamped and addressed foolscap envelope, to the Director of Education, Shire Hall, Durham.

G. H. Metcalfe, Director of Education.

Shire Hall, Durham, 10th November, 1954.

NORFOLK. COUNTY OF NORFOLK. The Norfolk County Council and the County District Councils concerned invite applications from registered medical practitioners holding the Diploma in Public Health for the whole-time appointment of ASSISTANT COUNTY MEDICAL OFFICER AND DISTRICT MEDICAL OFFICER OF HEALTH for the undermentioned area :—

Area No. 7
Downham Urban District.
Downham Rural District.
Marshland Rural District.

Apportionment of duties :—
Assistant County Medical Officer—7/11ths.
District Medical Officer of Health—4/11ths.

Combined salary scale £1363–£1618. Travelling and subsistence expenses will be paid in accordance with the County Council's scales. The person appointed will act as Assistant County Medical Officer under the direction of the County Medical Officer and as District Medical Officer of Health he will be subject to the instructions of the District Councils concerned.

Application forms, together with further particulars of the appointment, can be obtained from the County Medical Officer, 29, Thorpe-road, Norwich, to whom completed forms should be returned not later than 13th December, 1954.

DUNDEE. CORPORATION OF DUNDEE. Public Health DEPARTMENT. ASSISTANT MEDICAL OFFICER OF HEALTH. Applications are invited from registered medical practitioners under the age of 45 years for the above post. Preference will be given to candidates having a D.P.H. qualification. The duties are mainly those in connection with Public Health Preventive Services, but proficiency in tuberculin skin testing and B.C.G. vaccination will be an advantage. Salary in accordance with national scale. The appointment is superannuable, and the successful candidate will be required to pass satisfactorily a medical examination. The Corporation reserve the right to terminate the appointment of female medical officers on marriage.

Applications, stating age, qualifications and experience, and giving the names and addresses of 3 referees, should be lodged with the Subscriber on or before 11th December, 1954.

City Chambers, Dundee. ROBERT LYLE, Town Clerk.

EXETER. CITY AND COUNTY OF THE CITY OF EXETER. DEPUTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Applications are invited from registered medical practitioners for the appointment of Deputy Medical Officer of Health and School Medical Officer at a salary of £1250 p.a., rising by 5 annual increments of £50 to £1500 p.a., together with a car allowance as an essential user in accordance with the recommendations of Committee C of the Medical Whitley Council. Applicants must possess a Diploma in Public Health. The duties will be partly administrative and partly clinical, and will include work in the School Health Department. Recognition by the Ministry of Education in the ascertainment of educationally subnormal children and experience in mental deficiency will be deemed an advantage. The appointment is superannuable and subject to a medical examination. Canvassing will be a disqualification.

Forms of application may be obtained from the Medical Officer of Health, 5, Southernhay-west, Exeter, and should be returned to the undersigned not later than 8th December, 1954, in an envelope endorsed "Deputy Medical Officer of Health."

C. J. NEWMAN, Town Clerk.

10, Southernhay-west, Exeter, 12th November, 1954.

NORTHAMPTONSHIRE COUNTY COUNCIL. Applications are invited from registered medical practitioners holding a D.P.H. or similar qualification for the appointment of DISTRICT MEDICAL OFFICER OF HEALTH for the Urban Districts of Burton Latimer, Corby, Desborough and Rothwell and the Rural District of Kettering, and ASSISTANT COUNTY MEDICAL OFFICER for the same area. The Officer will act under the County Medical Officer of Health as Assistant County Medical Officer. The salary scales, which are based on an equal allocation of service between the County Council and the District Councils, will be in accordance with the awards of the Industrial Court—namely, (i) for the post of Medical Officer of Health to the District Councils—£775 p.a by 4 annual increments of £25 to £875 p.a., and (ii) Assistant County Medical Officer—£593 15s. p.a. by 7 annual increments of £31 5s. to £812 10s. p.a. A travelling allowance will be paid on the scale from time to time approved by the County Council. Office accommodation and clerical assistance will be provided. The appointment is subject to: (*a*) the Local Government Act, 1933, and the Sanitary Officers (Outside London) Regulations, 1935 and 1951; (*b*) the Local Government Superannuation Acts; and (*c*) the passing of a medical examination. The Officer will be required to devote his whole time to the duties of the appointment, to reside within the area for which he acts, and to discharge the obligations imposed on a District Medical Officer of Health by the relevant acts, orders, and regulations. As regards the duties of District Medical Officer of Health, the Officer will be subject to the control and direction of the several Councils. The appointment will be determinable upon 3 months notice on either side.

Applications, stating age, qualifications, and experience, with the names of 3 referees, should reach the Clerk of the County Council by 14th December, 1954. Canvassing will disqualify.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton, 18th November, 1954.

SALFORD. CITY OF SALFORD. Education Committee. Applications are invited from registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER (full-time or part-time). Preference will be given to candidates possessing the D.C.H. or D.P.H. The duties will consist of work mainly in connection with the medical inspection of school-children and maternity and child welfare, but will also include such other public health work as the Medical Officer of Health and Principal School Medical Officer may direct. Salary will be within the scale £950 p.a. rising by £50 annually to a maximum of £1300 p.a. In fixing the commencing salary consideration will be given to the candidate's experience and qualifications. The appointment will be subject to the usual conditions of Local Government Service.

Forms of application may be obtained from the Director of Education, Education Office, Chapel-street, Salford, 3, to whom they should be returned not later than 11th December, 1954. Please quote this advertisement.

R. RIBBLESDALE THORNTON, Town Clerk.

WOLVERHAMPTON. COUNTY BOROUGH OF WOLVERHAMPTON. Applications invited for post of ASSISTANT MEDICAL OFFICER OF HEALTH from registered medical practitioners with special qualifications or experience in pædiatrics, to work under the direction of Medical Officer of Health and Principal School Medical Officer, and to perform such duties as the Council may from time to time determine. Salary scale £950–£1300 p.a., superannuable, subject to 3 months notice.

Forms of application from Medical Officer of Health, 59, Waterloo-road, Wolverhampton, for return by 4th December, 1954. A. G. DAWTRY, Town Clerk.

Town Hall, Wolverhampton.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

HAYES, BROMLEY, KENT. Applications invited for a VACANCY (mainly urban) due to death. List at present approximately 2320, including 130 dispensing patients. Residence and surgery probably available for purchase. Apply on E.C.16A before 11th December, 1954, to—

F. E. MILES, Clerk, Kent and Canterbury Executive Council.
11, Station-road, Maidstone.

MANCHESTER. Applications invited from doctors wishing to undertake General Medical Services in Manchester. The list is approximately 3850 and the residence and surgery accommodation will be available to the successor. Applications, on Form E.C.16A (obtainable from address below) must be received by the undersigned not later than 11th December, 1954.

H. GLASS, Clerk of the Council.

Ardwick Town Hall, Ardwick Green North, Manchester, 12.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies.

The Wellcome Foundation Limited invites applications for an appointment on its medical staff. The duties of the person appointed would be mainly concerned with the clinical testing of new products and their pharmacological study in man. Applicants should have experience of clinical research, a background of pharmacology, and a working knowledge of statistical methods.—Applications, giving full personal particulars, including qualifications and experience, should be sent to the Secretary, The Wellcome Foundation Ltd., 183/193, Euston-road, London, N.W.1.

A Partnership is available with an income of approximately £4000 p.a. in a private Pathological Laboratory in South Africa with hospital appointments. Applicants must be registrable as Specialist Pathologists in the Union.—Apply to: Address, No. 988, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

M.B. (London), D.Obst.R.C.O.G., requires Assistantship with view, southern England or Northumberland. 33, married, family, car, capital. Teaching hospital and G.P. experience Prefer practice with X-ray laboratory, G.P., general and maternity hospital facilities. Interests also geriatrics, skins. References. Available January, 1955.—Apply: Address, No. 990, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Ex-Serviceman (former Lt.-Colonel), M.R.C.P., aged 34, qualified 2 years and employed throughout at own London Teaching Hospital, wishes to settle in chosen work of country practitioner at conclusion of present obstetrics house job. Available next spring. Family associations Dorset and the North but this implies no undue restriction.—Address, No. 989, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Wanted, by single-handed practitioner, Male Trainee-Assistant, in attractive Surrey village, 19 miles from London. To live in if necessary. Excellent opportunity to learn general practice. Beds available for treatment of own patients in 2 local hospitals. Considerable obstetrics if so inclined. Own car necessary.—Apply: Dr. D. A. WHITE, Camden House, Bletchingley, Surrey (Tel.: Bletchingley 206).

Hednesford, Staffs. Detached residence with 2 consulting-rooms, waiting-room, lounge, dining-room, kitchen, scullery, 5 bedrooms, bathroom. Attractive garden. 3 garages. Excellent central position.—J. V. BOSWELL & CO., Chartered Surveyors, 38, Waterloo-road, Wolverhampton.

Woodside Park, N.12. Fine modern detached residence with ½ acre of ground in excellent position near Underground station. Most suitable for doctor. 5 bedrooms, 2 large reception-rooms, lounge hall. Detached garage. Part central heating. £6000 freehold.—RICHARDS & PARTNERS, 3, Arundel-street, London, W.C.2 (TEMple Bar 7471).

Free from Boric Acid Taylor's Cimolite Dusting Powder is ideal for the most delicate infant or adult. 1s. 11d. per tin. Obtainable from SAVORY & MOORE, Bond-street, and JOHN BELL & CROYDEN, Wigmore-street, London, W.1.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

Austin. The new Show Models A.30, A.40, A.50 and A.90. Limited number of deliveries to proven essential users.—Application form, brochures, easy terms, from Austin House, 140/144, Golders Green-road, Golders Green, London, N.W.11.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Electrocardiograph for sale, standard Cambridge portable galvanometer type; excellent condition, £65. Seen West London area.—Address, No. 987, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

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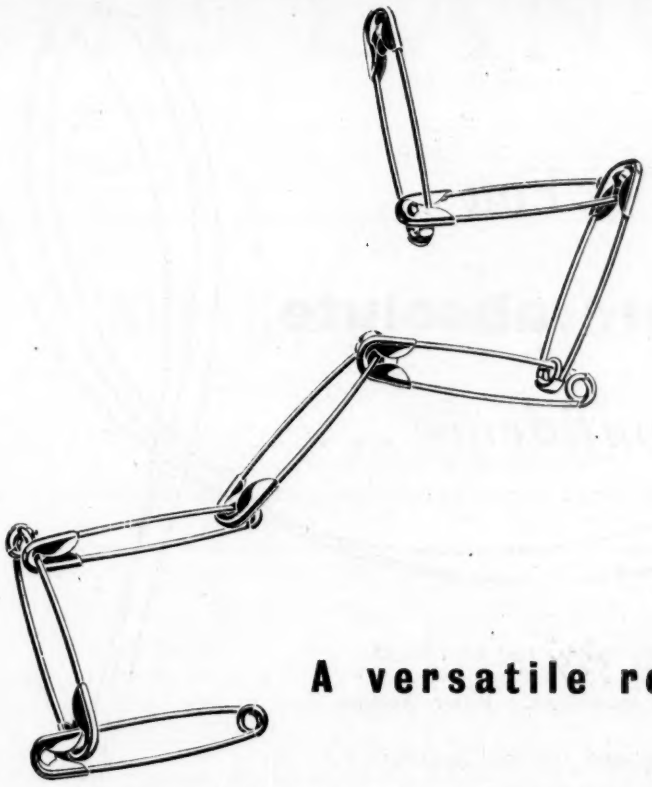

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